

THE INSTITUTION OF SURVEYORS.

TRANSACTIONS.

VOL. XI.

SESSION 1878-79.

LONDON:

PUBLISHED AT THE INSTITUTION,
12, GREAT GEORGE STREET, WESTMINSTER, S.W.

[ENTERED AT STATIONERS' HALL.]

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LONDON:
PRINTED BY GEORGE PHIPPS, 13 & 14, TOTHILL STREET,
WESTMINSTER.

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NOTE.



This Institution does not, as a body, hold itself responsible for statements made or opinions expressed, either in the Papers read or in the discussions which have occurred, at the Meetings.

The Institution of Surveyors,

12, GREAT GEORGE STREET, WESTMINSTER, S.W.

OFFICERS, 1878-79.

COUNCIL.

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JOHN WORNHAM PENFOLD

THIS COUNCIL WILL CONTINUE UNTIL MAY 1879.

The Institution of Surveyors

Is established—

1. To secure the advancement and facilitate the acquisition of that knowledge which constitutes the profession of a Surveyor, viz.—the art of determining the value of all descriptions of landed and house property, and of the various interests therein; the practice of managing and developing estates; and the science of ad-measuring and delineating the physical features of the earth.
2. To promote the general interests of the profession, and to maintain and extend its usefulness for the public advantage.

THE INSTITUTION consists of three classes, viz.—MEMBERS, ASSOCIATES, and HONORARY MEMBERS, with a class of STUDENTS attached.

A MEMBER must be more than twenty-five years of age, and have acquired a practical knowledge of surveying in one or other of its branches as above defined, and so practised on his own account for more than five years; or be a member of a firm of Surveyors established upwards of ten years; or in partnership with a Surveyor of ten years' standing. Every Member is eligible for election on the Council, for election or appointment to all offices of the Institution, and entitled to all its rights and privileges.

An ASSOCIATE must be more than twenty-one years of age, not necessarily a Surveyor by profession, but his pursuits must be such as to qualify him to concur with Surveyors in the advancement of professional knowledge. Associates are not eligible for the offices of President or Vice-President, but are eligible for election on the Council or for election or appointment to other offices of the Institution; they have

access to the Library, subject to the regulations of the Council, and are entitled to vote and take part in the affairs of the Institution at all Annual, Ordinary, and Special General Meetings of Members and Associates.

AN HONORARY MEMBER must be a person who, either by reason of his position or his eminence in science and experience, may be enabled to render assistance in promoting the objects of the Institution, but who is not engaged in practice as a Surveyor in Great Britain or Ireland. He has the privilege of being present and taking part at all Ordinary General Meetings, and of access to the Library, but no right of voting, discussing, or otherwise interfering in the affairs of the Institution; nor is he called on to contribute to its funds.

STUDENTS, not under eighteen years of age, may be admitted by the Council on the recommendation (according to a form) of four Members and two Associates, or of the Member or Associate to whom they are or have been articulated, and they may remain Students of the Institution at and during the pleasure of the Council, until they attain the age of twenty-one years, when they shall cease to be Students.

The Council may accord to Students such privileges, subject to such terms, regulations, and restrictions, as they shall from time to time prescribe.

Any person desirous of being admitted into the Institution (excepting to the class of Students) must be proposed and recommended according to a form, in which the full name, place of business (if any), usual residence, and qualifications of the candidate must be distinctly specified. This form must be subscribed by him, and signed by at least six Members or four Members and two Associates, certifying a personal knowledge of the candidate.

The proposal so made, being delivered to the Secretary, will be submitted to the Council, who, on approving the qualifications, will determine the class for which the candidate is to be presented for ballot at an Ordinary General Meeting of Members and Associates.

The following are the rates of contribution to the funds :—

	Annual Subscription.			Admission Fee.		
	£	s.	d.	£	s.	d.
<i>Student</i> . . .	1	1	0	—		
<i>Associate</i> . . .	2	2	0	3	3	0
<i>Member</i> . . .	3	3	0	5	5	0

An Associate may compound for his annual subscription for twenty guineas, and a Member for thirty guineas.

With the view of forming a Library and Collection, all Members and Associates are expected, within twelve months after their election, to deliver to the Council an original Paper on some subject connected with the profession, or to make a donation to the Library or Collection.

The affairs of the Institution are under the management of a Council, which is elected annually, consisting of a President, four Vice-Presidents, twelve Members, and two Associates. Besides the above, the Past-Presidents, and the President or Chairman of any local Association in alliance with this Institution, are Members of the Council *ex-officio*.

The Session of the Institution commences annually on the second Monday in November, and continues to the end of May. The Ordinary General Meetings are held on every alternate Monday during the Session. At these Meetings original communications are read on some professional subject, and their merits fully and freely discussed. Every Member and Associate has the privilege of introducing one visitor to these Meetings. Members and Associates are entitled to a copy of any printed publication issued by the Institution after their admission.

Institution of Surveyors.

REPORT OF THE DEPUTATION

*Appointed by a Minute of the Council (dated July 8th, 1878)
to represent*

THE INSTITUTION OF SURVEYORS

AT THE

CONGRÈS INTERNATIONAL DES GÉOMÈTRES,

Held at Paris on July 18th, 19th, and 20th, 1878.

THE Council having resolved to accept the invitation of the President of the Central Committee of the Géomètres (Surveyors) of France, to send representatives to the International Congress of Surveyors, held at Paris on the 18th, 19th, and 20th July, and having requested us to undertake the duty, we beg to report that—

The Deputation was intended to consist of the following:—

THOMAS HUSKINSON, Past-President;

EDWARD RYDE, Vice-President;

CHARLES JOHN SHOPPEE, Member of Council;

JOHN WORNHAM PENFOLD, Honorary Secretary; and

JULIAN C. ROGERS, the Acting Secretary.

Mr. HUSKINSON had arranged to join the other Members of the Deputation in Paris, but immediately after their arrival they received a telegram informing them that, owing

to a bereavement, he was at the last moment prevented from leaving England.

The Deputation proceeded to Paris on July 17th, and on the following morning attended a preliminary Meeting at the Tuileries, for the purpose of being introduced to the Members of the French Committee. At this Meeting the delegates of the various nationalities were hospitably invited by the French Surveyors to a banquet after the conclusion of the Congress, on July 20th.

At a later period of the day the Congress was formally opened in the Palais du Trocadéro, under the presidency of M. LEFÈVRE DE SUCY (a Surveyor of the highest standing in Paris, and one of the founders of the Société des Géomètres), and was attended by a large number of Surveyors from various European countries.

The questions submitted for discussion will be found set forth in detail in the Appendix to this Report. Some of these questions were of secondary interest to the English delegates, as they referred strictly to the system of land registration, called "The Cadastre,"* adopted by most of the nations of Western Europe. The discussion of these questions nevertheless elicited much that was interesting and instructive, both as regards the difficulties attending

*The French word "Cadastre" (Spanish *Catastro*, Italian *Catasto*) is, according to M. LITTRÉ, derived from the Bas Latin *Capistratum*, signifying "per head." It is applied to the official or State maps of lands and houses, which form, with the accompanying schedules of values, areas, and ownerships, the basis for taxation leviable upon such property. There is no general map of the whole country, but each commune has a separate map subdivided into convenient portions, denominated "Cadastral Sections." Each property or parcel is marked with a separate number corresponding with a similar number in the schedules or registers. The Belgium system is identical with that of France, but is carried out with much greater care. Surveyors in the employ of the State pay periodical visits to each commune, and mark on the communal maps all alterations and additions, and, on their return to the provincial centres, make corresponding alterations in the copies of the "Cadastre" kept at the chief office.

registration of title, and the settlement of a basis for the equalization of taxation.

The Deputation, while fully approving the greater part of the suggestions of the French Committee, as embodied in the programme, refrained from committing the Institution to any definite course of action, and spoke and voted in their individual capacities only.

A careful statement descriptive of the position and functions of Surveyors in England, was prepared and handed in at the Congress, and copies of it were distributed among the foreign delegates.* Statements of similar purport were embodied in Papers submitted to the Congress by delegates of other countries.

The Deputation took with them and presented to the French Society, in the name of the Institution, bound copies of the whole of the published volumes of "Transactions," as well as specimen sheets of the Ordnance Maps and Plans on the various scales.

After the conclusion of the Congress, the English, Belgian, Swiss, German, Italian, and Spanish delegates were entertained at a banquet, given in their honour by the French Surveyors, in the great French Restaurant, in the Gardens of the Trocadéro.

About one hundred and eight French and foreign Surveyors sat down to the banquet, which was presided over by M. LEFÈVRE DE SUCY. The English delegates were placed on the right of the President.

Immediately after the dinner, a gold commemorative medal, subscribed for by the French Surveyors, was presented to M. LEFÈVRE, to mark their appreciation of the important services (extending over thirty-one years) rendered by him to the Société des Géomètres, of which he and M. DÉRIVRY were the founders.

* A reprint of this statement will be found on page 19.

Various toasts were proposed, and speeches were made by most of the foreign delegates who, one and all, acknowledged in warm terms the cordial and hospitable welcome accorded them.

The President and Vice-President (M. BUCAILLE) of the French Society did the English delegates the honour of dining with them at their hotel.

It is to be hoped that the friendly feelings so pleasantly established, will bear fruit in the growth of relations of mutual advantage.

It will be seen, on reading Article 15 of the Programme and the discussion which followed it, that the provisional International Committee—constituted of the French Central Committee and a Vice-President elected by the delegates of each country—is to be further augmented before the end of the year by the election of two other Members for each nationality. It will be for the Council to confirm this provisional arrangement so far as England is concerned, and to nominate the additional Members of Committee if it be decided to proceed further in the matter.

We have reason to believe that if the Honorary Membership of this Institution were offered to MM. LEFÈVRE and BUCAILLE, it would be highly appreciated by both those gentlemen, and would serve as some acknowledgment of the courtesy and kindness shown by the French Surveyors to the English Delegates. M. LEFÈVRE DE SUCY, President of the Société de Géomètres, occupies a high professional position as a Consulting Surveyor in Paris; and M. BUCAILLE of Havre, Vice-President of the same Society, who has retired from practice, was formerly a distinguished member of the profession.

A reprint of the English statement before alluded to, together with short notes of the proceedings of the Congress, is appended to this Report. Full shorthand notes

of the proceedings, and of the Papers handed in, were taken by the Government Stenographers, and, it is understood, will be published by the Exhibition Authorities.

The Deputation desire to record their sense of the kind assistance rendered by, and the obligation they are under to, Mr. A. VAN DEN DRIESCHE (a relative of M. LEFÈVRE, resident in London), in connection with the preliminary arrangements, and in facilitating communication with their professional brethren of France. The highly technical character of many of the matters discussed, and the absence of exact equivalents in English for many of the terms employed by French Surveyors and in connection with French Law, rendered the assistance of Mr. VAN DEN DRIESCHE (who is perfectly familiar with the languages and customs of both countries) very acceptable to the Deputation.

EDWARD RYDE.

CHAS. J. SHOPPEE.

J. W. PENFOLD.

J. C. ROGERS, *Secretary*.

ABSTRACT REPORT

OF

THE PROCEEDINGS OF THE CONGRESS.

THURSDAY, JULY 18TH.—The foreign delegates were received at 2 p.m. in the central lobby of the Palais du Trocadéro, by the French Central Committee, consisting of MM. LEFÈVRE DE SUCY, President; BUCAILLE DU HAVRE, Vice-President; POTTIER, de Villers-Cotterets, Secretary;

DERIVRY DE NOYON, Treasurer and Editor of the Journal; and twelve other Members, accompanied by a large number of French Surveyors, and were conducted by them to the Congress Hall.

The following is a list of the names and nationalities of the foreign delegates specially accredited to the Congress :—

BELGIUM.—MM. PAUL DE JAER, Brussels; DE DEKEN, Brussels; VANKEERBERGHEIM, Brussels; CAPPILLE, Brussels; CAHU, Brussels; GASTHUY, Brussels; M. PAUMIER DU VERGER, Brussels; MATHEUSSENS, Dieghem; ENGELBER VANDERDUSSEN, Brussels; LACROIX (ERNEST), Brussels; MOERMAN, Schaerbeek.

ENGLAND.—Messrs. EDWARD RYDE, CHARLES JOHN SHOPPEE, JOHN WORNHAM PENFOLD, JULIAN CLARKE ROGERS.

GERMANY.—Dr. W. JORDAN, Karlsruhe; Herr LUDWIG HOHLER, Frankfort-on-Maine.

ITALY.—Signor RAPHAËL TARANTELLI, Téramo.

SPAIN.—S^{nr}. DIONISIO CASANAL, Saragossa.

SWITZERLAND.—MM. BISE, Fribourg; C. REDARD, Echaudens; REY, Geneva; BERTSCHY, Murest; BOREL Neuchatel; FROIDEVEAUX, Berne.

At the opening of the proceedings, the Central Committee of the French Surveyors acted as the Provisional Committee of the Congress.

M. LEFÈVRE, in opening the Meeting, said :—

“The Central Committee of the Géomètres of France, whose statutes have compelled them to meet at least once a year, in the month of July, for the past thirty years, wished to take advantage of the Universal Exhibition of 1878 to invite to their Meeting the Géomètres of neighbouring nations. The call has been responded to, and, in the name of my French colleagues, I most sincerely thank

you who, from England, Belgium, Switzerland, Germany, Italy, and Spain, have come to share our labours (personally and as representatives of your colleagues at home) and give us the benefit of your knowledge.

“Our Congress is an important one. It has two principal objects before it. (1) The endeavour to obtain (in cases where, as in France, no such regulation exists), from our respective Governments an official regulation of the profession of *Géomètres*, a profession so important to the interests of landed property and to the due administration of justice. (2) The complete renewal and the conservation of the *Cadaastre*, not only to insure an equitable incidence of taxes, and to guarantee a regular description of the landed property, so subject to change of boundary, but also to serve the interests of agriculture, industry, and commerce, by noting on future *Cadastrés* the geological composition of the various soils, and their altitudes, and thus assist in determining the kind of culture most appropriate to each species of soil and the minerals which may be extracted from it; and, finally, to facilitate prompt, certain, and inexpensive methods of promoting schemes of irrigation and drainage, railways, canals, roads, &c.

“The series of questions to be considered by this Congress has been indicated in last year’s deliberations of the Central Committee of the French *Géomètres*. You all have it in your hands. Your ideas are, no doubt, matured upon each point. This will tend to considerably shorten our sittings, and will allow us to give more time in the International Congress to the disputed questions which have been pointed out in the numerous reports received from other Committees sitting in France and abroad.

“A new proposal suggested by communications from our *confrères* of neighbouring nations, will be submitted to

you in the name of the French Central Committee. It is proposed that we consider the advisability of establishing a permanent International Congress of Surveyors, with a view to develop and spread the knowledge of Geodasy, the best methods of surveying and valuing landed property, and to decide on, and, as far as possible, reduce to uniformity, the means of improving and maintaining the correctness of the Cadastres, in order that they may realize all that is expected from our state of civilization.

"I propose, Gentlemen, to devote three consecutive days to our Congress. To-day we shall simply arrange the order of our labours, and organize a Committee. To-morrow we can proceed to solve, as far as time will permit, the questions included in the programme. On Saturday we can resume and conclude our deliberations, and consider the establishment of a permanent International Congress of Géomètres and determine its organisation."

At the conclusion of this address, M. FERAY, Senator, was elected Honorary President, and M. LEFÈVRE, President of the Congress, by acclamation. It was proposed and agreed to that one Member of each nationality be added to the French Committee, with the title of Vice-President. The following gentlemen were nominated by their respective colleagues to serve as Vice-Presidents of the Committee, and took their seats at the table, viz :—

EDWARD RYDE - - -	representing	England.
Dr. W. JORDAN - -	„	Germany.
PAUL DE JAER - - -	„	Belgium.
DIONISIO CASANAL - -	„	Spain.
RAPHAEL TARANTELLI	„	Italy.
C. REDARD - - - -	„	Switzerland.

The order of proceedings of the Congress was considered, and the discussion, in detail, of the various questions comprised in the Programme was adjourned until the next day.

On FRIDAY, JULY 19TH, the Congress re-assembled at 2 p.m.

Before the commencement of the formal business, Signor TARANTELLI asked permission to read to the Congress congratulatory telegrams which he had received from Rome and Alexandria.

The Articles of the Programme were then discussed *seriatim* :—

ARTICLE 1. Should the Government of each country be urged to enact that Surveyors be required to hold diplomas of competency, the profession remaining otherwise free for Surveyors so qualified?

M. ROGER-GAILLART, of Levignacq, gave a very excellent description of the conditions under which the profession was exercised in times anterior to the French Revolution of 1792, and the difficulties resulting from the neglect of the profession in subsequent legislation. He attached great importance to the adoption of the first Article.

M. LACROIX, of Brussels, pointed out that, formerly, the exercise of the profession in Belgium was subject, as originally in France, to very strict regulation for securing guarantees of competency for the satisfaction of the State and of private individuals. He also described the present position of Surveyors in Belgium, where the original form of legislation with regard to the Cadastre, imported from France, had been carefully preserved. He gave some account of the improvements effected in the original regulations, and of the guarantees of competency required of Surveyors in Belgium. He, however, repelled all idea of making the profession a privileged one, preferring that it should be perfectly free, the single condition of competency being satisfied.

Mr. E. RYDE, of London, considered it very desirable, in order to raise and maintain the status of the profession,

that all Surveyors should undergo some examination, and be required to hold a diploma of competency. There was, however, no such requirement in England, except to a very limited extent. The Surveyors appointed to see that the provisions of the Act of Parliament for regulating buildings in London were fulfilled must undergo such an examination, and hold a certificate before they could be appointed. Moreover, these special appointments were usually filled by Architects and not by Surveyors. But the English Deputation to this Congress was of opinion that its own Legislature would not be likely to interfere in favour of a profession, at the instance of such profession, without some special demand on the part of the public. Nor must, after all, too much importance be attached to the possession of such a diploma, inasmuch as the real qualifications of a Surveyor could only be acquired after years of experience, coupled with integrity, perseverance, and intelligence. Hence, it constantly happened that Surveyors of large experience were taken from one part of England to another on account of the special qualifications which they possess—a distinction which the possession of a diploma acquired in early life could not command. In no professions in England, except those of law and medicine, was any compulsory examination required, except as before-mentioned. This was to be accounted for or explained in the case of medicine by the fact that the consequences of incompetency might involve questions of life and death; and the same might be said with respect to the legal profession in connection with criminal law. It would also be observed that the same rule applied in the cases already referred to of Surveyors appointed under the London Building Act, where infringements of the law relating to the construction of buildings might lead to fatal consequences. In the case of other professions, incompetency generally merely resulted

in pecuniary loss, which, it was assumed, might have been guarded against by a careful selection. The English Deputation was, nevertheless, prepared to vote in favour of a diploma, which they could understand was probably more needed in France than in England, owing to the compulsory sub-division of property at the death of the owner, and the consequent necessity for a numerous class of Surveyors of ascertained skill, whose services should be within reach of everybody. The Institution of Surveyors of England was careful that no person should be admitted to Membership unless he possessed certain qualifications.

M. CALMON questioned whether the Article, if adopted, would not tend to the limitation of individual liberty.

The PRESIDENT replied that such a result was in no way to be apprehended. The Article was simply directed against ignorance.

Dr. W. JORDAN, of Karlsruhe, described the old and new systems in Germany, and declared his intention to support the Article.

M. REDARD described in detail the manner in which the profession was exercised in Switzerland, and exhibited very interesting examples of Swiss maps and plans. On behalf of himself and his colleagues, he expressed approval of Article 1.

M. DIONISIO CASANAL, representative of the Surveyors of Spain, gave an account of work executed in Spain, and also expressed his approval of Article 1.

Finally M. POTTIER, in the name of the French Committee, reviewed the arguments of preceding speakers.

The Article was then put to the vote, and carried unanimously.

In deference to the wishes of the Meeting, a general discussion then ensued on the remaining articles of the

Programme, this discussion being understood to be merely preliminary to the specific discussion of the several articles which subsequently took place. The result of this general discussion tended to show that the French Cadastre was (to quote the actual words used) "in a deplorable state of inferiority compared with those of neighbouring nations."

At the close of the sitting, presentations of books, maps, and plans were made by many of the foreign delegates.

On SATURDAY, JULY 20TH, the Congress met for its third sitting.

It was agreed to consider Articles 2 & 3 of the Programme in combination. These Articles are as follows:—

2. Is it desirable to urge the making (by qualified Surveyors holding diplomas) of new Cadastres, the general form and details of which shall be exact enough to constitute them true Land Books or Terriers of each State.
3. Should not such new Cadastres (every pains having been taken to insure their accuracy and genuineness) be held thereafter to constitute a Title as regards the limits and area of the hereditaments, and as regards all other particulars which they may comprise?

M. REDARD took objection to Article 3, on the ground of the grave difficulties likely to follow errors in the plans or calculations of quantities.

Mr. E. RYDE observed that the question of facilitating the transfer of land by means of a correct Plan or Register Book had occupied public attention in England for the last twenty-five years at least, and some attempts had been made towards the attainment of that object. But, at the present time, the subject was not ripe for legislation, and was much too large to admit of profitable discussion at the Congress.

No doubt that many of the difficulties in England arose in consequence of complications of title which often attached to landed estates, for in some of the British Colonies where those complications do not exist, a system of transfer by plan and registration had been adopted, and was believed to work successfully. In addition to the Government Ordnance Maps which had been described in the pamphlet handed in by the English Delegates, the rating authorities of most parishes in England were possessed of maps which had been made from time to time for the purposes of local taxation. These maps or plans were each furnished with a terrier or book of reference in which was set forth the name of every owner and occupier of land and houses, and the name or description of each separate piece or parcel.

For the purposes of local taxation there was in every parish a Valuation List, in which was set forth the name of the owner and occupier of each separate hereditament, the superficial area, and the gross and estimated annual value thereof. The gross annual value was the rent which a tenant might be expected to pay for a hereditament from year to year, if the landlord undertook to repair the property and pay the insurance against fire. The net rateable value was the gross value, after deducting therefrom the average annual cost of the repairs, insurance, and other expenses necessary to maintain the property in a state to command the rent. Upon this net rateable value all parochial and municipal taxation was levied; but the Government charged the income tax and house duty on the gross value. This practice of the Government was unsatisfactory, and attempts were being made to alter it so that all taxation may be levied on the net value.

The Valuation Lists in London were revised every year by adding thereto all new property, and every fifth year a

new valuation was made. In other parts of England a new valuation was made as often as the rating authorities deemed it necessary. There was, however, a Bill before Parliament this year, the object of which was, among other things, to extend the provisions of the London Act to the whole country. These valuations were made by parish authorities elected annually by the ratepayers; but they had power, which they often exercised, of calling in the assistance of Surveyors. In addition to the provisions for a new valuation every five years, it was competent for every person who felt aggrieved with the valuation of his own property, or that of any other person, to appeal to a constituted authority for redress.

M. SANGUET endeavoured, amidst considerable interruption, to read a Paper which he had prepared on the Articles generally.

The PRESIDENT pointed out to M. SANGUET that the general discussion had closed, and he thereupon, with some reluctance, left the tribune.

The PRESIDENT then put Article 2 to the vote, and it was carried unanimously.

Article 3 was then formally read. Although it was evident that the feeling of the Congress was by no means unanimous with reference to this Article it was passed by a considerable majority.

M. REDARD, however, asked in the name of the Swiss Géomètres that expression should be given on the Minutes to their dissent; and a similar request was made by M. DE JAER on behalf of the Belgian Delegates.

The Congress proceeded to the consideration of—

ARTICLE 4.—Should the valuations of income comprised in the Schedules of Cadastral Sections be those of the true or possible Revenue of each building or parcel of land?

M. REDARD was of opinion that taxation might as well be levied on Capital as on Revenue, and proposed a modification in Article 4, embodying that view.

Signor TARANTELLI could not vote in favour of the alteration proposed by M. REDARD, as all his votes were necessarily in conformity with the opinions enunciated by the National Italian Association, which he was there to represent.

The Article was then modified by the insertion of the words "or Capital" after the word "Revenue," and was passed almost unanimously.

ARTICLE 5—"Is it not desirable to fix this income net of all charges?"—was dropped.

ARTICLE 6 was then put to the vote—

Is it advisable to appoint special Registries of the Cadastre where Registries of Mortgage already exist, and have them kept in constant accord with the latter?

This Article was passed unanimously.

ARTICLE 7.—Is it not advisable to enforce the embodiment, in all deeds, of every particular given in the Cadastre, such as numbers, names, areas, incomes, &c.?

This Article gave rise to some discussion; but the objections were met by a suggestion of the President's, that the word "valuation" should be substituted for the word income, and that the words "unless plainly impossible" be added.

With this modification the Article was passed unanimously.

ARTICLE 8.—Should not alterations in the Cadastre be made only by the Surveyors appointed as keepers on the production of the deeds submitted for transcription, or of extracts supplied by officers of the Registration Department?

This Article, with the addition of the words "or of a notary public," was also unanimously agreed to.

ARTICLE 9.—Should there not be a distinct entry in the Cadastral Registers of each actual ownership, whether it vests in the husband, the wife, one or several children, or in joint owners?

ARTICLE 10.—Should not the Cadastral Registrations be taken as the basis for purposes of all direct Taxation or Registration fees of any kind?

Both these Articles were agreed to—the first unanimously, the second after a discussion, in which MM. CAPPELLE, DERIVRY, REDARD, and others took part.

ARTICLE 11 was then submitted to the Congress—

In case of division of parcels, should not an exact plan, drawn on the scale of the Cadastre by a Surveyor holding a diploma, be annexed to the deed, and a duplicate be sent to the keeper of the Cadastre, in order that he may carefully note the alterations?

This Article, with a slight modification, was passed unanimously.

ARTICLE 12 was then read as follows:—

Should not the Cadastral plans and their adjuncts show, in addition to the boundaries, areas, and values, the altitude and undulations of the surface, and the geological composition of the soil?

This Article gave rise to a considerable discussion in which many of the delegates took part.

The President expressed a hope that it would be passed without modification; but it was amended as follows, and passed by a large majority:—

"The Cadastral plans should show the altitude and undulations of the surface."

The other words of the Article, as originally drawn, were omitted.

ARTICLE 13.—Ought not the Cadastral Plans and their adjuncts, more especially the valuations, to be renewed at fixed dates?

M. LACROIX proposed a new wording for this Article viz:—

The Cadastral Plans should be renewed entirely, and the valuations revised at certain periods.

This amendment was agreed to by the Meeting.

ARTICLE 14 was, in consequence of the alteration of the wording of No. 13, suppressed.

ARTICLE 15, viz:—Should not a permanent International Congress of Surveyors be constituted? was then submitted to the Meeting, and was most favourably received; but, on the suggestion of M. LACROIX, the word Committee was substituted for the word Congress. M. LACROIX then formulated and submitted for approval the following scheme of organization for regulating future proceedings:—

That the Congress, wishing to give immediate effect and practical form to its decisions, declares that the permanent International Committee shall be composed of three members of each of the nationalities represented at the Congress, and that each of the aforesaid nationalities shall designate such members. That these designations are to be made between the present time and the end of the year.

That, after the definitive constitution of the permanent Committee, it is to make arrangements for drawing up its rules of procedure. That the Committee will occupy itself with all the questions connected with the interests to which the Congress has addressed itself; will decide the periods and the places at which future Congresses are to be held,

and will be provisionally composed of the present Members of the Committee of the Congress.

This proposal was accepted by all the Members.

The PRESIDENT, addressing Signor TARANTELLI, remarked that this decision of the Congress supplied the answer to the proposal which he (Signor TARANTELLI) had been instructed to make in the name of the National Italian Association, and at the earnest desire of the Agricultural Engineers of Italy, that a Congress should be held at Rome in 1881. The PRESIDENT added that Signor TARANTELLI's proposal, which was received with favour by the Assembly, would now be dealt with by the permanent International Committee which had just been constituted, and which would be domiciled provisionally at his own office in Paris.

The Orders of the Day having been disposed of, Mr. E. RYDE proposed a hearty vote of thanks to M. LEFÈVRE for the ability, tact, and skill with which he had presided over the deliberations of the Congress.

The vote was carried by acclamation.

The following Members of the Committee met at the Tuileries on Monday the 22nd, and signed the Minutes of the Proceedings of the Congress :—MM. LEFÈVRE DE SUCY, BUCAILLE, EDWARD RYDE, PAUL DE JAER, CASANAL, RAFFAËLE TARANTELLI, C. REDARD, POTTIER, HACHET, et DERIVRY.

[Statement handed in by the English Delegates, referred to on page 3.]

NOTES SUR LA POSITION ET LES FONCTIONS DES SURVEYORS (GEOMÈTRES-EXPERTS) EN ANGLETERRE.

L'Angleterre ne possède pas de Cadastre dans la stricte acception du mot. La grande levée trigonométrique du pays commencée il y a bien des années par le "Board of Ordnance" (autrefois Comité de l'Artillerie), est encore en voie d'exécution, mais elle a essentiellement le caractère d'une topographie militaire dont les cartes n'ont pas la prétention de montrer les limites des propriétés ou de les distinguer entre elles. Pour faire comprendre combien ce travail diffère de ce qui est connu dans d'autres pays sous le nom de plan cadastral, on peut expliquer que les divisions indiquées par des traits sur les cartes, sont les haies ou clôtures si communes dans le pays, tandis que la limite réelle de chaque parcelle est presque invariablement le bord extérieur du fossé qui longe la clôture. Il s'en suit que ces cartes, si belles qu'elles soient au point de vue de l'exécution, et précieuses sans aucun doute pour bien des usages, n'ont aucun rapport réel avec ce que l'on nomme un plan cadastral. "L'Ordnance Survey" est aujourd'hui une branche de l'Administration des Travaux et Bâtiments Publics, et est sous la direction d'officiers du Génie Militaire.

La première carte, commencée après l'achèvement de la grande triangulation du pays, était à l'échelle d'un pouce par mille (25 millimètres pour environ 1,609 mètres). Cette carte terminée depuis un certain temps est en ce moment soumise à une révision. Peu de temps après qu'elle fût commencée on décida de faire la carte des districts cultivés

à l'échelle de 6 pouces (15 centimètres) par mille. Cette dernière carte est encore en voie d'exécution. En 1854 on résolut de dresser une carte à l'échelle de $25 \frac{3}{10}$ pouces par mille ou $\frac{1}{25000}$ millième de la nature, et une autre de 60 pouces (1 mètre 50 centimètres) par mille pour les villes de 4,000 habitants et au dessus, et une troisième de 120 pouces (3 mètres) par mille pour quelques grandes villes. Les cartes aux plus grandes échelles sont des merveilles d'exactitude et de minutie, et indiquent avec une grande fidélité les plus petits détails de configuration de la surface.

De toutes ces cartes, celle à l'échelle d'un pouce par mille montre seule les ondulations du sol au moyen de hachures. Sur les plus grandes cartes ces ondulations sont indiquées jusqu'à un certain point par des cotes déterminant la hauteur au dessus d'un plan déterminé et par des courbes de niveau.

On construit en même temps, et en prenant pour base la carte à l'échelle d'un pouce, un plan géologique de tout le pays. C'est une carte, non plus de la surface, mais de la croûte solide du pays, indiquant par leurs contours les affleurements des stratifications ou formations ignées. On complète ce travail par une carte des terrains meubles, alluvions et diluvium ou *drift*, qui, quand elle sera terminée, constituera une représentation du *sol* de l'Angleterre.

Des exemplaires de chacune des cartes mentionnées, sont présentés au Congrès en même temps que cette brochure.

Le mot "*Surveyor*" a une signification très-étendue en Angleterre et est appliqué dans son acception la plus générale à toute personne qui a pour fonctions de faire une inspection, un plan, une description, ou un rapport, relativement à toute espèce de propriété meuble ou immeuble qui exige l'appréciation d'un expert quant à sa valeur ou condition présente,

son développement possible et sa durée probable. Dans cette acception étendue le terme est appliqué aux experts maritimes et à certains fonctionnaires des douanes et de l'exercice ainsi qu'à des employés des établissements militaires et maritimes chargés d'examiner le matériel et les équipements.

Le terme "*Surveyor*" dans son sens plus usuel et plus restreint, est reçu en Anglais comme s'appliquant spécialement à la classe d'experts qui s'occupent de reproduire la configuration physique de la terre, de l'administration des propriétés rurales et urbaines, de l'évaluation et du développement des ressources de ces propriétés, de la constatation de la nature et des rapports des divers intérêts qui en résultent, et conseillent sur les nombreux et difficiles problèmes qui, dans une société arrivée à un degré extraordinaire de concentration, et sous un régime de lois foncières d'une complication extrême, surgissent à chaque pas dans ce pays.

Avant le développement des grandes industries au commencement du siècle présent, les fonctions du *Surveyor* étaient comparativement simples et définies. Il était primitivement arpenteur et rarement appelé à s'occuper de question autres que les contestations de limites, l'identifications des droits seigneuriaux qui pouvaient diviser le propriétaire et ses tenanciers, les intérêts agricoles à déterminer entre les locataires sortant et les nouveaux venus, l'établissement des loyers et la vente des terres et maisons. Vers la fin du dernier et pendant les premières années du siècle présent, une quantité considérable de travaux résulta de l'appropriation des terres incultes. Les fonctions des *Surveyors* en ce qui concerne ces appropriations consistèrent à diviser la terre communale en lots représentant la valeur respective échéant à chacun des ayant droit.

Avec l'apparition des chemins de fer se fit sentir le besoin de moyens plus parfaits et plus scientifiques pour l'arpentage,

besoin qui grandit encore considérablement lors du vote de la loi de 1836 pour la commutation des dîmes ecclésiastiques prélevées sur toute espèce de produits agricoles, en un paiement monétaire variant avec le cours moyen du grain. Pour les besoins de cette loi, des plans furent dressés de toutes les terres sujettes à la dîme, et ceci pendant quelques années fournit des travaux à un grand nombre de *Surveyors*. Les besoins croissants et les profits réalisés attirèrent bientôt des hommes de position supérieure compétents dans toutes les questions d'estimation aussi bien que d'arpentage, et habiles dans l'emploi de ces instruments de précision qui, quoique en usage depuis bien des années dans les travaux officiels, n'étaient pas répandus dans le pays. Ces plans relatifs aux dîmes étaient de deux sortes. Ceux construits d'après des levées réelles furent nommés plans de première classe, ceux qui n'étaient qu'une compilation d'après les anciens plans des propriétés ou autres documents, furent dits de seconde classe. Ces deux classes de plans indiquent les limites des propriétés, ce que ne donnent pas les cartes du Gouvernement (*Ordnance Survey*). Beaucoup d'entre eux étaient excellents, mais le plus grand nombre n'étaient que de simples compilations faites d'après des matériaux très douteux, et il est regrettable que l'on n'ait pas profité d'une circonstance qui ne se représentera peut-être jamais, pour doter le pays d'une carte qui aurait formé un vrai registre cadastral du Royaume.

Cependant la paisible époque de l'arpenteur touchait à sa fin. Les chemins de fer dont le réseau serré couvre le pays, avaient pour la plupart été construits entre 1832 et 1866, *les plans de la Dîme* étaient pratiquement terminés depuis 1850, et le principe exceptionnel d'après lequel on conduisait les travaux de la grande carte militaire du pays, connue sous le nom de "*Ordnance Survey*," laissait le corps nombreux des arpenteurs sans occupation; au moment

présent on trouve difficilement, si ce n'est dans les districts les plus reculés du Royaume, un membre de la profession, dont l'existence dépende exclusivement de l'arpentage, et la plupart de ceux qui existent encore sont employés dans les bureaux de "Surveyors" d'un autre genre. En même temps une autre classe de praticiens s'est révélée et s'est emparée de la nouvelle position créée par les changements survenus dans la propriété foncière du pays. Les pouvoirs accordés par la Législature tant aux chemins de fer qu'aux autres sociétés par actions, pour l'acquisition des terrains nécessaires à leur exploitation, firent naître une classe de *Surveyors* versés dans toutes les questions et éventualités qui influencent la valeur de la propriété, et connaissant à fond les formes de procédure désignées par le législateur pour réduire à leur minimum les chances d'injustice là où le contrat libre est suspendu pour faire place aux décrets d'utilité publique. Les fonctions de ces *Surveyors* consistent principalement dans la négociation et la fixation des diverses indemnités à payer pour la propriété requise dans un but d'intérêt commun. Simultanément une autre espèce de *Surveyors*, combinant quelques unes des fonctions précédentes avec d'autres d'un caractère plus spécifique, commença à occuper une position bien définie dans les districts ruraux. Vers 1830 une législation nouvelle, à la quelle s'ajouta un peu plus tard l'influence des principes du libre-échange, eut pour effet de lever de nombreux obstacles qui entravaient la culture, et un élan vigoureux fut donné à l'agriculture anglaise. L'antique et prodigue système de culture dut faire place aux méthodes plus habiles et plus vigoureuses qui devaient permettre aux Anglais de lutter avec les producteurs étrangers. L'homme d'affaires des temps passés dut se retirer devant le conseiller instruit qui avait étudié avec soin les théories économiques et les moyens de cultiver avec succès, et qui, sans perdre de vue les relations tradition-

nelles entre le propriétaire et le locataire, possédait la connaissance et l'intelligence des nouveaux principes commerciaux dont le levain agissait sur toutes les autres industries. Le nouveau venu était reçu comme le conseiller confidentiel du propriétaire et en même temps comme le consciencieux gardien des droits du locataire.

Ces rapports, si délicats qu'ils puissent paraître, n'en existent pas moins encore sous leur meilleure forme ; et il en est résulté la longue liste des perfectionnements qui exigeaient la coopération intelligente de tous, qui dans l'espace d'un quart de siècle ont développé la production du sol d'une manière prodigieuse et (quelques puissent être les défauts de nos lois foncières) ont au moins sous ce rapport réellement profité à toutes les classes de la communauté. C'est principalement à ces *Surveyors* que l'on doit l'addition à la surface productive du pays d'une quantité considérable de sol autrefois sans valeur faute de drainage. Les misérables ramassis hétérogènes de hangars qui anciennement tenaient lieu de fermes, ont fait place à des bâtiments tout à la fois beaux et commodes, et (bien qu'il reste beaucoup à faire pour loger convenablement les populations agricoles) il y a aujourd'hui peu de propriétés de quelque étendue sur lesquelles les pitoyables huttes, qui servaient de refuges et d'habitations aux ouvriers des campagnes, n'ont pas été remplacées par des cottages spacieux et salubres.

Ce genre de praticiens forme probablement de nos jours la majorité, et certainement aucune branche de la profession n'a fait plus par ses connaissances variées, son habileté pratique et l'acquittement de ses importantes fonctions, pour lui conquérir la position sociale qu'elle occupe dans le pays.

Mais il y a d'autres branches de la profession qui exercent des fonctions de la plus haute importance pour la communauté. Le développement extraordinaire de l'industrie

manufacturière pendant les cinquante dernières années, a eu pour résultat d'énormes demandes de terrain à bâtir, a triplé et quadruplé les populations de beaucoup d'anciens centres et a fait naître de nouvelles villes qui comptent leurs habitants par dizaines de mille. La terre qui, il y a quelques années, n'avait qu'une valeur agricole, réalise maintenant dans certaines situations des milliers de livres sterling par acre (40 ares 4671) et dans bien des cas le loyer actuel est égal au prix d'achat d'il y a 25 ou 30 ans. Les intérêts considérables engagés dans ces propriétés et leur conservation, emploient un grand nombre de *Surveyors* dont les fonctions consistent, pour la plupart, à préparer et à rendre propres à la vente des terrains de ce genre, et à surveiller la construction des bâtiments qui doivent les couvrir. Les opérations de ces *Surveyors* sont principalement limitées au voisinage des grandes villes, et de leur habileté et de leur jugement dépendent des intérêts d'une énorme valeur.

Une autre branche est celle connue sous le nom de *Surveyors* de "*Quantités*," ou de "*Bâtiments*." Leurs opérations résultent de la coutume de contracter et soumissionner pour l'exécution des travaux. Leurs fonctions consistent à évaluer d'après les dessins les quantités de matériaux, et à estimer la main d'œuvre impliquée dans l'exécution des travaux, d'après les termes du devis fourni par l'architecte. L'entrepreneur ajoute ses prix aux désignations des quantités et établit ainsi sa soumission; il est donc évident que beaucoup dépend du soin et des capacités du *Surveyor*.

Une autre branche, très-importante quoique limitée, de la profession de *Surveyor*, est celle qui s'occupe des questions d'estimation des propriétés pour l'établissement des impôts municipaux au paroissiaux. La base de l'imposition de toute propriété étant la valeur estimée du loyer annuel, est sujette à de constantes révisions, et comme les

sujets d'estimation comprennent des chemins de fer, des usines à gaz, des établissements pour la distribution des eaux et d'autres industries d'un caractère public et d'une importance considérable, dont la valeur imposable est modifiée par un grand nombre de considérations complexes, des capacités particulières et un jugement exact sont nécessaires pour ce genre de travail.

Une classe de Surveyors qui a ses représentants parmi les membres de l'Institution, s'occupe presque exclusivement de l'exploitation des propriétés minières et surveille les travaux dans les grands districts de production du charbon et du fer des comtés du centre et du nord de l'Angleterre. Les fonctions de ces Surveyors sont particulièrement difficiles, entraînent une grande responsabilité et demandent des connaissances scientifiques considérables et une puissance particulière de rapide observation.

Mais les plus hautes fonctions du Surveyor en Angleterre sont celles qu'il exerce comme juge dans des questions d'une nature technique qui sont soumises à sa décision.

Son expérience variée des affaires, la nature pratique de ses occupations et sa connaissance des éléments constitutifs de la valeur des choses, le rendent apte à un travail que l'on s'accorde aujourd'hui presque universellement à lui confier, et maintenant de nombreux cas sont chaque jour renvoyés devant des membres de l'Institution.

Voilà les principales divisions de la profession de *Surveyor* telle qu'elle est comprise en Angleterre, et quoique dans la plupart des cas plusieurs de ces différentes branches soient réunies chez un même praticien, l'une où l'autre y est généralement prédominante. Il arrive aussi souvent que l'architecte réunisse à ses fonctions une ou plusieurs des branches réservées ordinairement aux *Surveyors*, ou bien que ces derniers ajoutent l'architecture à leur occupation

principale, mais en thèse générale les deux professions demeurent distinctes l'une de l'autre.

On verra d'après ce résumé que les devoirs du *Surveyor* touchent de très près ceux de plusieurs autres professions. Comme expert ou arbitre il tranche du juge. Dans les questions de drainage il marche sur les brisées de l'ingénieur, et dans les améliorations rurales et urbaines sur celles de l'architecte. D'un autre côté la grande variété de ses occupations le distingue tout à la fois de chacun et de tous, et la meilleure manière de décrire ses fonctions est de dire : qu'il s'occupe de ce genre de travaux qui ne nécessitent pas une pratique spéciale de l'une quelconque des professions désignées ci-dessus, mais une connaissance générale de toutes. Prise dans son ensemble c'est une profession dont l'énorme importance grandit chaque jour en Angleterre, et sur les capacités et l'honorabilité de laquelle reposent des intérêts d'une étendue colossale.

La profession de *Surveyor* est entièrement libre en Angleterre et est ouverte à tous ceux qui la choisissent et sont prêts à faire pour elle tout ce que leur permet leur talent. Avant l'établissement de l'Institution aucune mesure n'avait été prise qui puisse conduire un jour à l'introduction d'une épreuve quelconque représentant une garantie de capacité.

Il peut-être intéressant de rappeler comment on fut conduit à la formation de l' "Institution of Surveyors."

Il y a dix ans il n'existait aucun centre commun d'association pour la profession, aucun rouage pour la centralisation de son influence, aucun moyen de disséminer les connaissances utiles à son développement. Pour remplir ce vide l'*Institution of Surveyors* fut fondée en 1868, et le succès qui a couronné ses efforts peut-être qualifié d'extraordinaire. En ce moment, dix ans après sa fondation, elle compte de quatre à cinq cents *Membres, Associés, et Elèves*. Ses *Membres*

représentent les trois cinquièmes des intérêts territoriaux en Angleterre, et parmi ses *Associés* (qui ne sont pas nécessairement Surveyors mais s'identifient avec eux dans une certaine mesure) on compte plusieurs sommités du Barreau qui s'occupent d'une manière toute spéciale de la propriété foncière et sont ainsi mises en relations fréquentes et intimes avec les Surveyors. L'Institution occupe à elle seule une maison commodément aménagée, possède une nombreuse bibliothèque utile comme référence et a un revenu annuel de près de cinquante mille francs.

Dans la grande salle de l'Institution, des arbitres siègent presque chaque jour et rendent leurs jugements sur des questions d'indemnités.

Depuis sa création elle a publié dix Volumes d'Annales, consistant entièrement de questions pratiquement intéressantes pour ses membres, et elle a pû de plusieurs manières, mais en partie au moyen de ces publications, influencer utilement le cours de la Législation en diverses occasions.

Ceci est nécessairement une brève description de la carrière de l'Institution, mais elle servira à indiquer la position qu'à atteint le *Surveyor* en Angleterre et à donner une idée de l'avenir qui l'attend si, chez nous comme dans tous les autres pays, il reste fidèle aux habitudes pratiques de son esprit; elles sont son principal titre à la confiance de cette classe nombreuse et toujours croissante, qui voit en lui un guide dans quelques-unes des plus difficiles et plus importantes relations entre les membres des sociétés civilisées, confiance qu'il doit s'efforcer de conquérir et de conserver par une conduite honnête et équitable.

(Translation of the foregoing.)

England possesses no cadastral survey in the strict sense of the term. The great trigonometrical survey of the country (commenced many years ago by the Board of Ordnance) is still in progress, but the objects of the survey are professedly those of

Military Topography, and the maps do not pretend to exhibit the boundaries of estates, or to distinguish properties from one another. To further show how greatly this survey differs from what is known abroad as a cadastral survey, it may be mentioned that the physical features delineated upon the maps are the fences or hedges (so common in England), whereas the real boundary of each parcel, is almost invariably the outer edge of the ditch, adjoining the fence. It follows that these maps, beautiful as they are in point of execution, and valuable as they are for many purposes, have no true affinity to what is called a cadastral survey. The Ordnance Survey is now a department of the Office of Works and Public Buildings, and is carried on under the superintendence of officers of the Royal Engineers.

The first map commenced after the completion of the great triangulation of the country was on a scale of one inch to a mile. This map has been some time completed, and is now being revised. Shortly after its commencement, it was determined to map the cultivated districts on a scale of six inches to a mile. This map is still progressing. In 1854, it was determined to produce a map on the scale of twenty-five inches to a mile, or the $\frac{1}{2500}$ th part of nature; and another, of sixty inches to a mile, for towns of 4,000 inhabitants and upwards. The large scale maps are marvels of accuracy and minuteness, and show with great fidelity the smallest features of the surface. Of the foregoing maps, that on the scale of one inch to a mile alone shows the undulations of the surface by means of shading. On the larger maps, these are shown to some extent by figures, giving the height about a fixed datum line, and by contour lines of equal level. Simultaneously with the foregoing, and on the one inch map as a basis, a geological survey of the whole country is being constructed. This is a map of the solid geology of the country, showing the area of the outcrop of the underlying formations. In addition to this, a surface or drift map is being prepared, and this latter will, when completed, constitute a map of the soil of England. Example copies of all the foregoing maps accompany this description.

The word Surveyor is a term of very wide acceptance in England, and is applied, in its broadest sense, to describe any person whose duty it is to inspect, describe, delineate, or report upon any species of property, movable or immovable, requiring the judgment of an expert, as to its present value or condition, its possibilities of development, and its probable duration. In this extended sense, the term is applied to Surveyors of shipping, and to certain Officers of Customs and Excise, and to officials of the Naval and Military Establishments, charged with the duty of examining stores and equipments.

The term Surveyor, in its more usual and restricted sense, is understood in England as specially applying to the class of experts engaged in delineating the physical features of the earth, in the management of landed and house property, in determining and developing the capabilities of such properties, in ascertaining the nature and relation of the various interests therein existing, and in advising upon the many difficult problems which, in a highly-concentrated condition of society, and under property laws of extreme complexity, continually arise in this country.

Until the rise of the great manufacturing industries in the earlier part of the present century, the duties of the Surveyor were of a comparatively simple and definite nature. He was primarily a measurer of land, and his judgment was rarely exercised upon matters other than the arranging of boundary disputes, the identification of manorial rights, as between the lords of the manor and their tenants, the settling of agricultural valuations between outgoing and incoming tenants, the adjustment of rents, and the sale of landed and house property. Towards the end of the last and in the early years of the present century, a great deal of work was created by the large number of enclosures of waste lands. The Surveyors' functions in connection with these enclosures consisted in dividing among the various persons possessing rights over the common lands, allotments representing the value of their respective rights.

With the introduction of railways, a sudden demand arose for a more skilful and scientific method of measuring land, a demand which was largely increased by the passing of an Act in 1835 for the commutation of Ecclesiastical Tithes or Tithes, leviable upon every species of agricultural produce, into a money payment, varying with the average price of corn. For the purposes of this Act, plans were made of all titheable lands; and this again gave employment for some years to a large number of Land Surveyors. The increased demand for work and the profits realized, soon attracted a better class to the occupation,—men competent to undertake every class of surveying and measuring, and skilled in the use of those instruments of precision which, though employed many years previously in connection with the Government surveys, had not hitherto come into general use. These Tithes Maps were of two classes. Those constructed from actual survey were denominated first-class maps; those merely compiled from estate and other maps were called second-class maps. Both classes show the boundaries of properties, which the Ordnance Survey does not. Many of them were of the best possible kind, but by far the larger number were mere compilations from the most doubtful materials; and it is to be regretted that an opportunity, which may never again occur, was lost of endowing the country with a map which would have formed the basis for a true cadastral

survey of the kingdom. The halcyon days of the Chain Surveyor were, however, soon doomed to decline.

The railways, which now cover the country with a network, were most of them constructed within the period from 1832 to 1866, the tithe maps were practically all completed by the year 1850, while the extended scale upon which the great military survey of the country, known as the Ordnance Survey, was conducted, left the great body of Chain Surveyors without an occupation. At the present moment, a Chain Surveyor, depending wholly upon that occupation for his livelihood, is scarcely to be met with in any but the most primitive parts of the kingdom, and most of the class who still remain are employed as assistants in the offices of other kinds of Surveyors. Meanwhile, another class of practitioner was coming into notice, and occupying the new position created by the altered circumstances of every kind of property in the country. The compulsory powers, granted by the Legislature to Railway and other Joint Stock Companies to acquire property for the purposes of their undertakings, called into existence a class of Surveyor versed in all the circumstances and contingencies which go to make up value, and thoroughly conversant with the forms of procedure designed by the Legislature for reducing to a minimum the injustice likely to arise when the laws of free contract are suspended for special public purposes. The practice of this class consists, to a large extent, in negotiating and adjusting the various compensations to be paid for property taken for public works. Simultaneously, another class of Surveyor, combining some of the foregoing qualifications with others of a more specific character, began to occupy a well-defined position in agricultural districts. About the year 1830, a course of legislation set in which (in conjunction with the introduction, at a later date, of the principles of free trade) had the effect of removing many of the obstacles to the cultivation of the soil. A great stimulus was given to English agriculture, and the old and wasteful system of husbandry had to make room for the more skilful and vigorous methods necessary to enable the English to compete with the foreign producer.

The old-fashioned land-agent had to retire in favour of the trained adviser who had carefully studied economic theories and the conditions of successful farming, and who combined with a due regard to the traditional relations of landlord and tenant an intelligent and enlightened perception of the new commercial principles which were leavening every other species of industry. The new comer was supposed to be the confidential adviser of the land-owner and, at the same time, the conscientious guardian of the just rights of the tenants. This relationship, delicate as it may appear, has, on the whole, been maintained in its best spirit, and from it has sprung the vast series of improvements requiring

intelligent co-operation at all hands which, in a quarter of a century, has so largely increased the produce of the soil, and (whatever may be the evils of our land laws) has, to that extent at any rate, substantially benefitted all classes of the community. Under the auspices mainly of this class of Surveyor a vast amount of undrained and, previously, valueless soil has been added to the productive area of this country. The miserable groups of sheds which formerly did duty for homesteads have given place to handsome and serviceable farm buildings, and (though much remains to be done in the way of the better housing of the agricultural population) there are few large estates upon which the wretched dwellings, in which the labourers used to herd, have not been, to a great extent, replaced by roomy and well-drained cottages.

This class of practitioner is now, probably, more numerous than any other, and, certainly, no branch of the profession has done more—by varied knowledge, practical skill, and the discharge of important duties—to win for the calling the social position which it now occupies in this country.

But there are others classes of the profession who exercise functions of the greatest importance to the community. The wonderful growth of the manufacturing industries during the last half-century has created an enormous demand for building land, has trebled and quadrupled the populations of many ancient places, and has called into existence new towns numbering their tens of thousands of inhabitants. Land which possessed but an agricultural value a few years ago now realizes, in certain situations, thousands of pounds an acre, and in many cases the annual rental value at the present moment is equal to the fee simple value of 25 or 30 years ago. The valuable interests involved, and their due conservation, give employment to a large class of Surveyors whose practice consists, for the most part, in laying out and maturing for the market property of this character, and in superintending the construction of the houses which cover it. The operations of this class of Surveyors are mainly confined to the neighbourhood of large towns, and upon their skill and judgment interests of enormous value are dependent.

Another class of Surveyors is that known as Building, or Quantity, Surveyors. This business is the outcome of the system of contracting and tendering for works. Their duty is to ascertain from the working drawings the quantities of materials and to estimate the labour involved in the execution of the work, according to the terms of the specification supplied by the architect. The builder adds his prices to the statement of quantities, and thus forms his tender for the work. It is manifest that upon the care and skill of the Surveyor much depends.

Another, and a very important though limited, branch of the Surveyor's business is connected with questions arising out of the valuation of property for purposes of local taxation. The basis of the assessment of every class of property, being the estimated annual rental value, is liable to constant revision, and, as the subjects of valuations include railways, gas and water-works, and other public undertakings of great magnitude the rateable value of which is modified by a great number of complex considerations, considerable skill and judgment are required for this class of work.

Another class of Surveyors which has representatives among the Members of the Institution, is engaged almost exclusively in the management of mineral property and in superintending the workings in the great coal and iron districts of the Midland and Northern Counties of England. The duties which they discharge are of a specially difficult and responsible nature, and require the possession of considerable scientific knowledge and quick powers of observation.

But the highest functions of the Surveyor in England are those which he exercises as judge in cases of a technical nature referred to his decision. His varied business training, the practical nature of his occupation, and his knowledge of the elements of value constitute qualifications for the work now widely recognized; and innumerable cases are now referred to the decision of Members of the Institution.

These constitute the main divisions of the profession of Surveyor as understood in England; and though, in most cases, several of these different branches are combined in one practice, one or the other generally predominates. It often happens, too, that the architect combines with his practice one or more of the foregoing branches of surveying; or it may be that the Surveyor adds an architectural practice to his primary occupation, but as a rule they are kept as distinct occupations. It will be seen from this sketch of the profession that the duties of the Surveyor lie on the fringes of several other professions. In his capacity of umpire or arbitrator, he trenches upon legal functions. In drainage matters, he treads upon the heels of the engineer; and in rural and urban improvements, upon those of the architect. On the other hand, the very variety of his duties distinguishes him from each and all of these other professions; and he cannot be better described than as the person who performs that class of work which requires not a special knowledge of any one of the foregoing professions, but a general knowledge of them all. Taken as a whole, the profession is one of great and growing importance in England, and interests of great magnitude depend upon the capacity and fidelity of its members. The Surveyor's profession is perfectly free in England, and it is open to anyone

to adopt it, and do the best which his skill enables him to do. Until the establishment of the Institution no steps whatever had been taken, likely to lead at a future time to the introduction of some species of test which should represent a guarantee of competency.

It may be interesting to place upon record the steps which led to the formation of the Institution of Surveyors. Ten years ago there existed no common centre of association for Surveyors, no machinery for the exercise of combined influence, and no means of disseminating information useful for the profession. To meet this want the Institution of Surveyors was established, in 1868, and the success which it has achieved may fairly be called remarkable. At the present moment (ten years after its establishment), it numbers between 400 and 500 Members, Associates, and Students. Its Members represent three-fifths of the land managed in England, and among its Associates (who are not necessarily Surveyors, but are identified, to some extent, with Surveyors) are some of those leading Members of the Bar whose practice relates, to any large extent, to landed property, and who are thus brought into close and frequent contact with Surveyors. The Institution possesses a commodious house in its sole occupation, a large library of reference, and an income close upon £2,000 a year. In the Lecture Theatre of the Institution arbitrations upon matters of compensation are held almost daily. Since its establishment it has published ten volumes of "Transactions," consisting wholly of matter of practical interest to its Members, and has, by means of these publications, and in other ways, been able to beneficially influence the course of legislation on various occasions. This is, necessarily, but a brief outline of the career of the Institution, but it may serve to indicate the position to which the Surveyor has attained in England, and to foreshadow the future that is open to him if, in our own and in other countries, he remains true to those practical habits of mind which constitute his highest value, and strives, by honest and equitable conduct, to gain and retain the confidence of the large and increasing class which looks to him for guidance in some of the most difficult and important of human relationships.

THE OPENING ADDRESS

BY

WILLIAM STURGE, PRESIDENT,

AT THE ORDINARY GENERAL MEETING OF

THE INSTITUTION OF SURVEYORS,

NOVEMBER 11TH, 1878.

GENTLEMEN,

My first duty, in addressing you from this chair, is sincerely to thank you for the honour you have done me in electing me your PRESIDENT for the present year—an honour, which I need hardly say, I highly appreciate; and I may add that no endeavour shall be wanting on my part to fulfil the duties of the office to the best of my ability.

The Report of the Council, presented to the Annual Meeting in May last, so fully detailed the progress of the Institution during the first decade of its existence that I need not recur to that subject. It may not, however, be out of place to make a few remarks on the advantages which the Institution has conferred upon the profession at large. Scattered, from the nature of their duties, over the entire kingdom, the various Members of the profession had no common centre of action, no means of general communication, and no literature. The Institution has supplied all these wants. Our commodious and centrally-placed rooms afford a place of rendezvous, especially for our country Members; our General Meetings afford opportunities for

the discussion of all subjects connected with the duties of our profession ; these discussions are placed in the hands of every Member and Associate by the aid of our printed volumes of "Transactions"; and our Library contains a copious and valuable collection of books for reference and study. Perhaps more may yet be done to increase the usefulness of the Institution, and I proceed to indicate a few points that occur to me. I think that the compilation of a schedule of the average annual prices of all kinds of agricultural produce would be of great use, for its preparation occupies too much time in searching the necessary documents to be generally carried out by individual Members. Reports of the seasons and other circumstances affecting agriculture in various parts of the kingdom might be made by Members from time to time, and could not fail to be interesting and instructive. The answers to the inquiries issued by the Council some years ago, in reference to the agricultural customs prevailing in the various counties, have never been collated and circulated among our Members, and an abstract of these would prove of great service in settling the covenants of leases in various parts of the country.

I observe that only eight names are enrolled in the class of Students. This almost nominal number leads me to consider how the advantages of the Institution to young men entering the profession may be more largely developed. Hitherto, the subject has received but little attention. My predecessor in office alluded to it in his Address at the opening of the last Session, and suggested whether the admission of Students to a higher grade should not be accompanied by some sort of examination, as a guarantee of their character and efficiency. He proceeded to observe that the nature and extent of this guarantee would require grave consideration, and in this I entirely concur. I think

it is a subject of great importance, and one which may well be introduced for discussion at one of our General Meetings by means of a Paper from some Member qualified to do it justice. I well recollect the dearth of theoretical instruction in the days of my pupilage, and the manner in which I had to grope my way in the dark, almost without chart or compass. In the present day, I think that the difficulty does not lie so much in the means of acquiring knowledge as in the mode of testing the amount and value of that acquired. A course of professional reading and an examination by means of written and oral questions are, in my opinion, of great importance, but it is scarcely within the limits of this Address to indicate how these objects may be carried out. I commend the subject to your consideration, in the hope that some practical result may be at length achieved.

One very interesting event has occurred during the recess of our sessional year. I allude to the invitation extended by the President of the Central Committee of the Surveyors (*Géomètres*) of France to send representatives to the International Congress of Surveyors to be held at Paris in July last. The Council accepted this invitation, and appointed a Deputation, who attended the Congress accordingly.

A Report of the proceedings of the Congress having been printed for circulation among our Members, it would be superfluous for me to refer to them in detail. I will however, make a few remarks on one or two important subjects discussed.

One was the expediency of establishing a permanent International Congress or Committee of Surveyors, with a view to develop and spread the knowledge of Geodesy, and the best methods of surveying and valuing landed property. The Council will, doubtless, consider this proposal in all its

bearings, and report to a future Meeting the course which it may recommend the Institution to pursue.

Another subject was whether it is expedient that the Government of each country should enact that Surveyors should hold diplomas of competency?

This gave rise to much discussion, and a resolution affirming the principle was carried unanimously. It will be seen that the question bears upon that to which I have already alluded of an examination for Membership in this Institution. An official examination by the Government is one thing, and a test examination for Membership in this Institution is another; and whilst I doubt whether the former is practicable, or even desirable in this country, I think the latter is worthy of attainment both in the interests of the profession and of the public.

As some recognition of the cordial and courteous reception accorded by the Central Committee of French Géomètres to the deputation, the Council has asked you to confer upon the President and Vice-President, MM. LEFÈVRE and BUCAILLE, the Honorary Membership of this Institution.

The legislation of the last Session of Parliament was productive of several measures affecting the agricultural interest.

Of these I will first refer to "The Highways and Locomotives (Amendment) Act, 1878." Section 7 of this Act enacts that, after the 25th March, 1879, the expenses of keeping in repair the highways of each parish within their district shall be deemed to have been incurred for the common use or benefit of the several parishes within their district, and shall be charged on the district fund. The highway board may, however, with the consent of the county authority, modify this provision in certain specified, exceptional, cases.

The maintenance of the highways by a highway district,

instead of by individual parishes, appears to me to be a measure calculated to promote efficiency, economy, equality of cost, and simplicity in management.

The 13th and 15th Sections make an exceptional provision for the maintenance of "main roads"—that is, turnpike roads which have been "disturnpiked" since the 31st December, 1870; and roads which are a medium of communication between great towns, or a thoroughfare to a railway station, or otherwise. In these cases, with the approval of the county authority, one-half of the expense of maintenance may be charged upon the county rate.

The 23rd Section provides for what is called "extraordinary traffic," and enacts that, where, by a certificate of their Surveyor, it appears to the authority liable to repair any highway or main road that, having regard to the average expense of repairing highways in the neighbourhood, extraordinary expenses have been incurred by such authority in repairing such highway, by reason of the damage caused by excessive weight passing along the same or extraordinary traffic thereon, such authority may recover in a summary manner, from any person by whose order such weight or traffic has been conducted, the amount of such expenses as may be proved, to the satisfaction of the court having cognizance of the case, to have been incurred by such authority by reason of the damage arising from such weight or traffic."

This provision appears to me to introduce a new principle into the incidence of local taxation. Hitherto, the measure of contribution by each individual has been the rateable value of the property in his occupation. Now, he will be liable to pay in addition for any extraordinary traffic he may bring upon the roads. The landowner who builds a mansion or a homestead, or who has a fall of timber; the

speculator, who covers a suburban district with villas, and thus increases the wealth and prosperity of the neighbourhood, and the contractor for public works, will be liable to pay large amounts for excess over average traffic on the certificate of the Surveyor.

I cannot but think this provision calculated to check expenditure in improvement; likely to be fruitful of litigation, and to be of doubtful expediency.

I have next to refer to "The Public Health (Water) Act, 1878."

Section 3 provides that it shall be the duty of every rural sanitary authority to see that every occupied dwelling-house in their district has, within a reasonable distance, an available supply of wholesome water sufficient for consumption and domestic use.

When it appears to the rural sanitary authority, on the report of their inspector of nuisances, that any occupied dwelling-house has not such supply, and that the same can be provided at a reasonable cost not exceeding a capital sum, the interest on which, at 5 per cent, would amount to two-pence or threepence per week, and that the expense of providing the supply should be paid by the owner, the authority may take proceedings to compel the owner to afford such supply.

Section 4 gives the owner power of appeal on certain specified grounds.

Section 6 forbids the occupation of houses until the owner has received from the sanitary authority a certificate that an available supply of wholesome water has been provided within a reasonable distance.

Section 7 gives the sanitary authority and their officers, right of entry on any dwelling which they have reasonable ground for believing has not a proper supply of water.

These very summary powers are doubtless necessary to ensure in all cases the blessing of a pure and wholesome supply of water. In many districts, the carrying them into effect will be attended with great difficulty; and the satisfactory working of the Act will mainly depend on the judgment and discretion of the medical officers and inspectors appointed by the sanitary authority. Whenever practicable, I think the supply of water to villages and small towns should be undertaken by the sanitary authority, rather than be left to individuals, except in cases where the town or village principally belongs to one owner who can deal with the question in a comprehensive way.

And here I would make a few remarks on the practical working of the Sanitary Acts. Admitting to the full the necessity of very summary powers for the protection of the public health, and the abatement of nuisances, I must protest against the manner in which the Acts are in some instances carried out by the inspector of nuisances. Some of these officials appear disposed to perform their duties in a harassing way, and to be utterly regardless of the expense to which they put owners of property; and I could mention several cases in which a disposition has been shown to strain the powers of the Acts beyond their legitimate object. Although it is true that the owner may complain to the sanitary authority and afterwards appeal to quarter sessions against any order made upon him, yet appeals entail so much trouble and expense that the remedy is almost as bad as the disease.

I need only very briefly refer to "The Weights and Measures Act, 1878," which, after setting forth the standards of weights and measures, and the imperial measures of length, weight, and capacity, enacts that every contract, bargain, sale, or dealing for any work done or goods sold by weight or measure, shall be void, unless made

according to the imperial weights or measures ascertained by this Act or by some multiple thereof.

The 23rd Section enacts that any person who prints, and any clerk of a market who makes any return, price list, price current, or any journal or other paper containing price list or price current, in which the denomination of weights and measures, quoted or referred to, denotes a greater or less weight or measure than is denoted by the imperial weights and measures under this Act, shall be liable to a fine not exceeding ten shillings for every copy of such price list, price current, journal, or other paper.

It is to be hoped that these provisions will, in time, lead to the disuse of the many antiquated weights and measures still in use in some parts of the country, and to the general adoption of the imperial standards. It is not to be expected, however, that the legal standards of weights and measures will, for some years at any rate, entirely supplant the local or customary standards to which people in the rural districts cling with such singular tenacity. Mr. G. G. RICHARDSON mentions in his recently-published work on the "Corn and Cattle Producing Districts of France," that the unity in the system of weights and measures in that country is more apparent than real. The law of France absolutely forbids the use or quotation of any measures but those of the metrical system; but by the aid of multiples and aliquot parts of the legal standards, all the old local weights and measures have been re-established. The deliveries are made in legal measurements, but the bargains are, over a great part of France, made in the old names—an evasion of the laws to which no penalty attaches.

But the most important Act affecting agriculture is "The Contagious Diseases (Animals) Act, 1878"—an Act which was the subject of much controversy and encountered a powerful opposition in its passage through Parliament.

It was even stigmatized as the “dear meat” Bill, on the pretext that it was a covert attempt to restore protection under the plea of preventing cattle disease. It is shown by the Board of Trade returns that, in the ten years from 1868 to 1877 inclusive, the number of cattle and sheep in the United Kingdom varied as follows, viz:—

Cattle, 1877	.	.	.	.	9,731,537
„ 1868	.	.	.	.	9,083,416
Increase	.	.	.	.	648,121
Sheep, 1868	.	.	.	.	35,607,812
„ 1877	.	.	.	.	32,220,067
Decrease	.	.	.	.	3,387,745

Converting these numbers into tons of meat on the principle adopted by Mr. H. S. THOMPSON in his article on the management of grass land (*vide* Journal of the Royal Agricultural Society, Second Series, Vol. VII. Part 1.), I find the yield of beef and mutton in 1868 to be 990,000 tons, and in 1877, 997,000 tons; and, allowing for the increase of population from 30,618,000 in 1868 to 33,444,000 in 1877, I find the supply of beef and mutton to be $72\frac{1}{2}$ lbs. per head in 1868, and only $66\frac{3}{4}$ lbs. in 1877, showing a decrease of $5\frac{3}{4}$ lbs. per head per annum. The supply of live and dead fresh meat from abroad was 4 lbs. per head in 1868 and $8\frac{3}{4}$ lbs. per head in 1877, showing an increase of $4\frac{3}{4}$ lbs. per head in the foreign supply, but a decrease of 1 lb. per head in the home and foreign supply taken together. This deficiency in the supply of beef and mutton was more than made up by the importations of pork, bacon, and hams, which increased from 40,000 tons in 1868 to 136,000 tons in 1877.

These facts show the great importance of measures to prevent the reduction of our fresh meat supply. Whether

from cattle disease, or from drought, or from demand overtaking supply, or, as is probably the case, from a combination of these causes, the number of cattle and sheep has not kept pace with the increase of the population, and up to the end of 1877 the foreign supply had barely made good the deficiency.

As the Bill was first brought in, it provided that no foreign animals were to be moved alive out of the wharf at which they were landed; but, as this indiscriminate slaughter met with strong opposition, this provision was so far modified that a discretionary power was vested in the "Privy Council" to issue general or special orders permitting animals to be landed without being subject to slaughter or quarantine, but every such order is to be laid before both Houses of Parliament.

It is to be hoped that, by a judicious use of the powers thus vested in the Privy Council, cattle disease may be greatly mitigated, if not altogether stamped out, and that our home supply of meat may be gradually increased.

The last number of the Journal of the Royal Agricultural Society of England (Vol. XIV., Part 2, No. 28) is almost entirely devoted to a "Memoir on the Agriculture of England and Wales, prepared under the direction of the Council of the Society, for the International Congress, Paris, 1878." The volume contains a series of articles on almost every subject connected with the state and prospects of English agriculture. It is not within the limits of this Address to refer to its contents in detail. The various writers have treated the subjects entrusted to them with great ability and research. The volume, as a whole, is a most valuable contribution to agricultural literature, and contains a mass of information calculated to be peculiarly interesting and instructive at the present time. I commend it to your careful and attentive perusal.

The present position and prospects of agriculture in

reference to foreign competition have recently attracted much attention in connection with the enormous increase in the importation of food. For the first few years after the repeal of the Corn Laws in 1846, wheat was the principal article of food imported on a large scale; but the quantity imported did not exceed 2,650,000 quarters, or about one-fourth of our home growth. Of barley, the imports were 772,000 quarters, or about one-fourteenth of our home growth. Of oats, 1,700,000 quarters, or about one-twelfth of our home growth. Of butter and cheese, the imports did not exceed 680,000 cwts., or about one-fifth of our home supply. Of fresh meat, there was none. Of salt meat, but little, and that not retained for home consumption. The population at that date was about twenty-five millions. In the thirty years which have since elapsed, about eight and a-half millions have been added to the population, which is now estimated at thirty-three and a-half millions, showing an increase of about thirty-three per cent. Our home supplies of food have not increased in proportion, and are now utterly insufficient for our wants. The deficiency is made good by the increase in our foreign supplies. It is estimated that we now obtain from abroad about one-half of our supply of wheat, one-sixth of that of barley, one-fifth of that of oats, one-half of that of butter and cheese, and one-fifth of that of fresh and salt meat. Of fresh meat only, the proportion up to the end of last year was much smaller, being only one-twelfth.

From returns made to the House of Commons, on the motion of Sir GEORGE BALFOUR, it appears that the total value of our imports of food from foreign parts rose from £25,898,000 in 1858 to £99,682,000 in 1877, and that in this period of twenty years the value of the foreign supply consumed, per head, rose from 18s. 3d. to £2 19s. 7d. It must, however, be borne in mind that this increase is due to higher prices as well as to larger importations.

Thirty years ago, the shores of the Baltic and the Black Sea were the sources from which our foreign supplies of wheat were chiefly drawn. Since that time the boundless resources of the fertile plains and rolling prairies of the far west of America have been developed, and their produce is transported across that continent to the outports by a vast network of railways, and is thence rapidly conveyed by fleets of steam ships to our shores. Commercial communication is no longer compelled to await the return of the mails, but orders are flashed across the Atlantic, like lightning, by the electric telegraph, and executed without delay. The effect has been to create an enormous increase in our imports of provisions of all kinds. Does a bad seed time or a wet harvest, or any other of the contingencies of our fickle climate, threaten our wheat crop, America sends us her surplus growth, rudely cultivated on her virgin soil, but ripened and harvested under cloudless skies? whilst it is too often the lot of the British farmer to watch his far heavier crops, the result of high and expensive farming, failing to mature for lack of sunshine, or damaged at harvest time by dripping rains. Nor does America confine her supplies to wheat. She has for many years sent us large quantities of cheese, which has gradually improved in quality, though it does not yet rival our choicest Somersets and Cheshires. She also sends us immense quantities of bacon and salted meat, and she has recently added to these supplies fresh meat of excellent quality, packed on board ship in chambers cooled by ice, and arriving in good condition. She now sends us her fat cattle, which land at our ports ready for the butcher, and the British farmer finds them in the market side by side with his own high bred and symmetrical Short-horns, or Herefords, or Devons.

But these imports, however great, have not exceeded the wants of our increasing population. This is proved by the fact that in the course of thirty years ending with 1877

every article of agricultural produce largely increased in price except wheat. The average price of wheat for the last seven years was 53s. 8d. per quarter, or about 5 per cent. under the tithe commutation average of 56s. per quarter. Barley rose from 32s. per quarter to 38s. 10d., or twenty per cent. Oats rose from 22s. per quarter to 26s. 2½d., or nearly twenty per cent. The tithe commutation average for 1878 is £112 7s. 5¾d. for every £100 of rent charge. The advance in the prices of butter, cheese, and meat was much greater—viz., in butter 45 per cent., in cheese 33 per cent., in beef 33 per cent., and in mutton 50 per cent.

There can be no doubt that these increased prices have greatly stimulated the production of foreign supplies, and that, in the articles of wheat and cheese, the supplies have during the present year so increased in proportion to the demand as to have caused a considerable fall in prices. Wheat has fallen to 40s. per quarter, and good cheese 10s. per cwt. The fall in inferior qualities has been fully 15s. per cwt. The imports of fresh meat and fat cattle have greatly increased during the year, but so far the effect on the market has not exceeded a reduction of 4d. to 6d. per stone. Diminished consumption, both in this country and America, consequent on the prolonged and severe depression of trade and the general reduction of wages, have doubtless been the principal cause of the fall in prices. A revival of trade, which according to all past experience may be expected sooner or later, will doubtless be followed by increased consumption and an advance in prices.

The advance realized in the last few years in the price of agricultural labour has been nearly if not fully maintained, notwithstanding that the migration from the agricultural to the mining and manufacturing districts has been checked.

Although the construction of railways and other public works proceeds on a much smaller scale than it did some

years ago, yet the maintenance of way of existing railways absorbs large numbers of men who would otherwise be employed in agriculture, and helps to maintain the rate of wages. These facts point to the necessity of an extended use of labour-saving apparatus,—the steam thrashing-machine, the reaping-machine, the mowing-machine, the elevator, and the steam plough. Brain must, as far as possible, supply the place of sinew, in order to enable us to cope with foreign competition by reducing the cost of production.

So far as relates to cereal crops, I fear the present year must be added to the catalogue of recent adverse seasons. The weather was favourable up to the end of March, but heavy rains set in in April and continued with little intermission until the middle of June, and did much damage to corn crops of all kinds; but this was, to some extent, repaired by a hot and dry July. Unhappily, the rains recurred in August with the result of a harvest more or less unfavourable in most parts of the country, and of much grain of inferior quality. On the other hand, the season was unusually favourable both for roots and pasture, and heavy hay crops were secured in good condition, affording an ample supply of fodder for the coming winter.

The combined effects of the succession of adverse seasons, of the price of labour, and of the increasing supplies of food from abroad, has been to cause great depression among agriculturists, and farms which would have readily commanded tenants a few years ago are now let with difficulty, and are even left on hand. What hope is there of an end to this state of things, and how is British agriculture to surmount its present difficulties? I fear that I can say little that is new in answer to these questions. The laying down of inferior arable lands to pasture will probably be more extensively carried out. The extent to which this change has progressed in the nine years from 1869 to 1877 is shown by the Board of Trade returns. During that

period the land cultivated with cereal crops in Great Britain, decreased from 9,758,000 acres to 9,210,000 acres, or about 5 per cent.; and in Ireland from 2,218,000 acres to 1,862,000 acres, or about 15 per cent. The extent of land under green crops did not materially vary, but the extent of permanent pasture apparently increased in a greater ratio than the decrease in cereals—a discrepancy probably due to defective returns.

Another resource, especially in the great corn-growing districts, is higher farming by the aid of the increased consumption of feeding stuffs and the use of artificial manures; and at the same time of labour-saving apparatus, with the view of increasing the gross produce of the soil relatively to the cost of labour, for it is well known that the expense of labour is smaller in proportion to a large than to a small produce.

In dairy and pastoral districts, the cost of labour does not press so heavily as in the great corn-growing districts, though it is not without its influence. My remarks as to higher farming are quite as applicable to pasture as to arable land. No land owes so much to nature and so little to art as pasture, and no land will better repay the liberal use of artificial fertilizers.

One feature of recent times is the increased demand and the high prices paid for hay and straw consequent on the growing wealth and population of our great towns. There can be no doubt that these high prices are partly due to the restrictions on the sale of these articles. Formerly, these restrictions were absolutely necessary, as the only available return was town manure, which was limited in quantity and would not pay for long carriage. Straw alone, without artificial assistance, is but a poor fertilizer, and its exchange for feeding stuffs and artificial manures is a positive advantage. It may well be then that, with sufficient safeguards to ensure a due return to the soil, restrictions against



the sale of hay and straw may be relaxed in districts where these articles are in demand.

For an improvement in the seasons we can but trust in Providence. Cycles of good and bad seasons have ever recurred from the time of the seven plenteous years and the seven years of famine in Egypt until now. So also has it been with commercial prosperity and adversity. We have recently experienced an unusual succession of adverse seasons and a protracted time of commercial depression. But—

“The darkest day,

Live till to-morrow, will have passed away;”

and let us hope that, according to all past experience, brighter days are in store for us.

But, at all events, agriculture, like other undertakings, must be progressive. Commerce requires from time to time new fields, and manufacture new products, improved machinery, and new markets. So it is with agriculture. Be it our endeavour, as land-agents, carefully to watch the signs of the times, and to promote such improvements and such practical measures as may conduce to the welfare of all interested in the ownership and occupation of the soil.

I will conclude by mentioning some of the subjects on which Papers will probably be read, or discussions will take place, during the Session, viz. :—

The use of Sewage by Farmers.

Hopgrowing.

The Rating of Railways.

Contributive Value.

Dilapidations.

The Disposal of the Sewage of Paris.

Land Tax.

I need hardly impress upon all connected with the Institution—our Members especially—the great importance of keeping up, Session after Session, the supply of well-prepared Papers on subjects of interest to the profession.

Mr. E. P. SQUAREY (Member) had great pleasure in proposing a vote of thanks to the PRESIDENT, for his interesting Address, although he would have preferred that the task had fallen upon some Member of the Institution outside the Council.

Land-agents were keenly alive to the depressed condition of agriculture at the present moment. He fully shared the PRESIDENT'S hope and expectation that better times were in store, but the assurance had been so long held out to tenants, that they were, very naturally, beginning to distrust it.

The whole subject was one on which it behoved those holding responsible positions to speak with caution, and with the fullest regard to all the elements of the question. This, at any rate, he might say, that perhaps too much weight had been given to the effects of adverse seasons upon the prosperity of agriculturists. Considerable as these effects undoubtedly were, he could not help thinking that they had been intensified by a noticeable degradation in the farming and cultivation of lands for cereal and root crops. According to statistics given in Mr. CAIRD'S recently published book on "The Food Supply," there had been a decrease of something like four or five per cent. in the production of wheat during the last ten years, as compared with the two preceding decennial periods. It might be that these averages were computed from areas that were too limited to afford a sound basis for calculation, but, assuming them to be approximations to the truth, he was, as he had said, disposed to attribute much of the decrease to degradation of cultivation. He said this with regret, as it clearly pointed to an insufficiency of labour or a want of means on the part of the tenant farmers to do justice to their land in these depressed times.

Mr. F. A. PHILBRICK, Q.C. (Associate of Council) rose with great pleasure to second the vote of thanks. Everyone

who had heard the President's Address must have felt with him that the Institution continued to fulfil satisfactorily the objects with which it was founded. It was interesting to hear that such friendly relations had been established with the foreign Societies by whom such a hearty reception had been given to the delegates to the International Congress of Surveyors in a neighbouring capital. He trusted that the profession would do their utmost to maintain the high standard, and consolidate the reputation which the Society had already achieved, both in this country and abroad.

The vote of thanks, having been put to the Meeting, was carried unanimously, and acknowledged by THE PRESIDENT.

Mr. R. C. DRIVER (Member) desired to direct the attention of the Members to an Act—"The Real Property Limitation Act, 1874,"—which was to come into operation next year. All present were familiar with the fact that a 20 years' user of land without disturbance, or 20 years' occupation of land without payment of rent, had hitherto held good as against any owner or presumptive owner. This time had been contracted, by the Act to which he was referring, to 12 years. He thought it important that those who had not read it should do so at once, and should take an opportunity of going round the various estates which they managed to see what encroachments, if any, had taken place. There were other points in the Act which were very important, and well worthy of attention.

Mr. W. BROWN (Member) mentioned that he and his partner had directed their attention to the matter, and had discovered many encroachments, and had already taken steps to secure their clients against injury.

The Meeting then adjourned.

AT
THE ORDINARY GENERAL MEETING,

Held on Monday, November 25th, 1878.

EDWARD RYDE, VICE-PRESIDENT, IN THE CHAIR.

THE HON. SECRETARY laid on the table a copy of the "Real Property Limitation Act," to which attention was called at the last Meeting by Mr. DRIVER.

The Paper read by Mr. R. W. P. BIRCH, at the Ordinary General Meeting of May 13th, on "The Use of Sewage by Farmers," was discussed.

Mr. BIRCH (Associate) handed in the following letter, which he had received from Mr. WOLLEY DOD:—

"Eton, 20th November, 1878.

"Dear Sir,—I am very sorry that I am unable to be present at the Meeting of the Institution of Surveyors. * * * *

"I shall be most happy at any time to give any information, or send notes on any subject connected with our farm. The management of it is now entirely in the hands of the bailiff, CHARLES TOUGH, brother of Lord WARWICK's bailiff. We have always considered the sanitary conditions first, and allowed the financial question to be quite subordinate, as the difference of one or two hundred pounds, which is the most that could be made, is of comparatively little consequence to our board.

"I think, probably, a clever man, working the farm on his own account, would be able to give £4 an acre rent, the soil being very poor, and not worth 30s. an acre without sewage; but this, with 40 acres, would not nearly pay pumping station expenses.

"As regards the milk, we only keep about six cows, selling a large part of the produce. The milk produced is all taken by my house and one other house, a college, and is of excellent quality. There would be difficulty in disposing of more, owing to the prejudice against it, from sentiment or ignorance.

"I have never turned my attention much, as I said before, to the financial capabilities of our farm; but in a desultory sort of way I have tried to find out what becomes of the sewage when put on the land, and as far as I can make out none of it, under ordinary circumstances, reaches the subsoil—that is, in a liquid condition. The gravel is saturated with water at a depth of about seven feet to eight feet, varying little in summer and winter, the soil varying from 1 ft. to 3 ft. in depth. When we put four to five inches of sewage on, I have tried to follow it down by digging after it. In summer the ground, when examined the first, second, and third days, remains quite dry at about eighteen inches deep, and I have never been able to trace sewage lower. What happens in winter, when the soil is wet to a greater depth, I cannot say. I have often wished to get our chemist to make experiments on the soil, but he is always too busy.

"Then, again, there is an apparent mystery at our pumping station. The quantity we pump in the twenty-four hours fairly represents the quantity of sewage the town makes, according to our estimate; but when it reaches a certain level in the tanks the influx ceases, and the sewage backs up in the sewers no higher, the rise being in a constantly decreasing ratio from the first. I have no doubt in my own mind that the pipes let in subsoil water in large quantities when empty, and let out sewage in large quantities when full, owing to faulty construction and breakages in the setting of the cement. This escaped sewage mixes with the subsoil water, and is carried no one knows where, being no doubt drunk in a diluted form in all the villages on the Thames bank down to London.

"I believe soldered iron pipes to be the only way of conveying sewage harmlessly below the permanent subsoil water level.

"Yours very truly,

"C. WOLLEY DOD."

Colonel JONES (Visitor) thought that, perhaps, the best mode of illustrating his views of the subject of discussion would be to ask the audience to accompany him back a few thousand years in the records of human history.

According to an old chronicle, mankind were once seized

with sudden desire to build a great tower, the top of which should reach the heavens. Great pains were taken to select well-burnt bricks for the building, but unhappily slime was used for mortar. Whether the cracks in the walls and settlements in the foundation, which might be expected under these circumstances, led to disputes and recriminations among the builders, the chronicle does not say, but this is known, that after a time no one builder understood what the other meant. It was hardly likely that all those good bricks were wasted. They were probably used for some other building, but for the immediate purpose in view they ceased to be of any use whatever. It required no great effort of imagination to adapt this allegory to the history of the sewage question.

Ten or fifteen years ago a pretty general feeling prevailed in this country that a great tower could be built which was to conduct them up into a sort of sanitary heaven. There was to be immense sanitary comfort for the towns and immense manurial wealth for the surrounding fields. A number of enthusiastic people set to work on the edifice which was to do such wonders, and it was undeniable that they availed themselves of good well-burnt bricks in the shape of solid facts, like those resulting from the experiments on the Craigentenny and Lochend meadows in Edinburgh, and, on chemical analyses the soundness of which was incontestable.

The superstructure raised upon these fundamental facts was carried out with the most reckless disregard of cost, and a perfect Babel was the result. It even came to be doubted whether those initial facts were facts at all; and he thought immense credit was due to the author of the Paper under discussion, that he had taken upon himself the office which, he supposed, was performed by somebody after Babel, of preparing these bricks, as he might call them, for

future use. He (Colonel JONES) happened to be acquainted with a good many of the places instanced by Mr. BIRCH in his Paper, where farmers applied the sewage to their own profit and relieved the neighbouring towns of a nuisance, and he could only say that the facts, as far as he could speak to them, were very fairly and truthfully stated, and he agreed with the whole of the author's conclusions with respect to them. There was only one point on which he was disposed to go further than Mr. BIRCH—namely, as to what was known as the “separate system.” He thought that the whole difficulty of dealing with sewage was due to uncertainty as to the amount of liquid to be dealt with arising from the addition of an element so variable as the rainfall, and no man could safely deal, whether he be farmer, chemist, or anything else, with an unlimited and variable quantity of water. The farmer knew what he had to deal with when nothing but the ordinary water supply reached him with the sewage.

It was a matter of simple computation, and the amount varied within very small limits. Speaking generally, the water supply of the town, per head, was the measure of the sewage which came out of it, and it was easy to provide for its reception. If, however, in addition to this the farmer was to be called upon to deal with a quantity so uncertain as the rainfall in a climate such as ours—and it should be borne in mind that one inch of rainfall over a single acre of ground amounted to 101 tons of water—the case was altogether different. The Author of the Paper admitted this difficulty in connection with arable farms, and had quoted him (the speaker) as one who had urged it with particular emphasis. He believed that he was right in doing so, and he had convinced his own neighbours at Wrexham, and had established a rule that all future drainage works should be done on the

separate system. It ought to be borne in mind that sewerage and drainage were separate matters entirely.

That the sewage, if delivered free of any other admixture than the ordinary water supply, could be made to pay, he could testify from personal experience. Other farmers besides himself had made it pay, and many of his neighbours would be only too glad to get any sewage he could spare. In almost all the cases in which he had been consulted with reference to the disposal of sewage he had found (if the sewage had been going out of the town at all) that somebody had been helping himself to it surreptitiously. In one instance, where he had been called on to select a site for a sewage farm, it was found that a farmer had been quietly tapping the sewer for years past, and, unknown to the corporation and the borough officials, had been growing immense crops of grass, and of course had made a good thing of it. He begged to hand in a letter which he had received from Lord NORTON since he entered the room. Lord NORTON, when Sir CHARLES ADDERLEY, had, it would be remembered, opposed the Birmingham Bill, which threatened him with serious annoyance and injury to his property. Since that time he had given great attention to the subject, and had recently read a Paper on Sewage Pollution before the Social Science Congress, of which he was President. The letter was as follows:—

“ Hams, Minworth, Birmingham,
Nov. 23rd, 1878.

“Lord NORTON is unable to attend the Meeting on Monday, but he hopes he has made his own opinion well known, that the right application of sewage is to re-fertilize land, and that the one thing now to be done to render this application, even from the larger towns, practicable and profitable, is the separation of storm water from the sewage drains. There is a perverse opposition to this final step being taken, though its cost would be repaid tenfold, and a valuable manure would be made proper use of, instead of being mischievously wasted and turned into a nuisance.”

This letter was a confirmation of what he (Colonel JONES) had already said with reference to the "separate system." Strange to say, engineers seemed to have a dread of putting foul water into a pipe without putting a lot of rain water on the top of it, forgetting that the rain water came at the very time when the sewers least required flushing, which could be better done artificially when necessary.

Moreover, they would insist on making the sewers so big that the dry-weather flow was a mere trickle; the natural result was a great accumulation of sewer gas, and on the top of the sewer gas came the next rainfall ready to force it right through any traps that householders might interpose between the sewers and their sinks and water closets.

He begged to thank the Members for the patience with which they had listened to him, and for affording him a long desired opportunity of expressing his opinions on this subject.

Mr. J. J. MECHI (Visitor) said that the question under discussion was of the utmost interest, for it was in reality the question of food supply; and if any one doubted it, let him imagine what would happen to our crops if all manurial aid were to fail us—assuming such a state of things to be conceivable. All were, he believed, agreed that that which we received from the land should, after its employment as food, go back to the land; and the only question really at issue was, how could this be accomplished satisfactorily alike to the towns and to the country.

The towns accumulated a large proportion of the products of the soil within a very small compass, and were bound to send them in their altered condition back again to refertilize the districts from which they came. The difficulty of doing this had been solved by our practical friends, the Prussians; and he had much pleasure in placing a map

showing the general scheme adopted for dealing with the sewage of Berlin at the disposal of the Institution. The whole city of Berlin had been sewered, he believed, by Messrs. AIRD, the engineers. What was previously wasted was now used for the production of food for the people, and the result, which had been recently stated in a short letter in the *Times*, was that it cost only £60 an acre to buy the land, carry out all the processes of distribution, provide the pipes, and pay the working expenses. He had these facts on the best authority.

It was a reproach to a country like Great Britain, with its vast wealth and immense resources, that the Prussians should be so far in advance of us, and should have actually accomplished what we had done little else than talk about. It was the same at Dantzic. Messrs. AIRD had for years had the sewage of that city, and made it pay; and they had informed him that they had contracted with the city of Breslau, with 260,000 inhabitants, to receive all their sewage and put it on 3,000 acres of land for twelve years, as a profitable investment. Messrs. AIRD also informed him that all the German towns were coming to the conclusion that they might well utilize their sewage. The Berlin people had this one advantage, that the land was poor and sandy in the district, and could, consequently, be purchased at a moderate price, and the municipalities or authorities, whoever they were, either owned the land or had the power of applying it to particular purposes. But the most satisfactory part of it all was that the thing, when done, was a financial success, for the richest crops had been grown on that barren sand,—crops superior to those grown on the good land of the district.

Of the advantages, material and sanitary, of utilizing animal excreta, there was, he imagined, no vestige of doubt, and the supposed difficulties of taking the sewage of a city

like London, and diffusing it over the land, were mere child's play to the men who had carried out great undertakings like our railways and other public works. It was astonishing that so much time had been wasted on mere discussion and that so little had been done. As his hearers were aware, the Metropolitan Board of Works, some few years ago, let the whole of the North London sewage to a company for fifty years, and the works were to be completed within nine years. The company lodged, as a preliminary, £25,000 with the Metropolitan Board of Works, and the Board still held that amount in their hands. The Act of Parliament was obtained at great cost by Mr. HOPE and others, and the whole thing was in proper form, and wanted only two millions of capital, which the people of England did not choose to supply.

The consequence had been that for seven or eight years the residuum and voidances of four millions of people had not only been lost for the purposes of food production, but had gone to obstruct and poison the river. Where and how the sewage was to be applied were points upon which he was not competent to speak, but he could testify that, where sewage was applied to the land, it produced great results. He had used the sewage of his farm for the last 35 years in irrigating a portion of his land, and it was astonishing what results, even from the refuse of a single house, might be produced in this way. He did not agree with Colonel JONES that too much water was mixed with the sewage, and for this reason. The manurial power of Great Britain was generally put at about two sheep per acre per annum,—reducing pigs, bullocks, and so on, to sheep, for the purposes of calculation. The total manurial power, thus expressed, would therefore represent about 94 million sheep. Now, how much water fell annually for each of these two sheep per acre? The average rainfall of the kingdom was 26 inches, or

2,600 tons per acre ; or, in other terms, 2,600 tons of water annually to each pair of sheep. The residents of a town, on the other hand, mixed only about 60 tons of water with their sewage, independently of the storm water. The quantity of water to the manurial unit, in the case of towns, was, therefore, infinitely small as compared with the proportion of water to the two sheep on the farm.

If the manure of two sheep, subjected to such an enormous dilution, was of such benefit to the land as it was universally admitted to be, what must be the manurial value of the town excreta with only one-fourth of the dilution, and how could so comparatively small an admixture of water be said to be injurious ? The municipal authorities were, he considered, bound to take care that so valuable a fertilizer went to the land, and not to the water ; and if they did not do so, Government should interfere and compel them. He regretted the loss of so much manure, and that people were so loth to speak about it. Excrementitious matter, twenty or thirty years ago, when he first mooted the question, was considered a most unsavoury subject of conversation. He was of opinion, with the Chinese, that the first lesson a child should be taught was to understand that the proper application of his voidance was the production of food for his future existence. The Chinese had learnt this lesson, and the result was that, with a population of between three and four hundred millions, though they had to import coal and a few other things, they contrived to maintain themselves without any foreign importation either of food or manure. Some of those present were old enough to recollect, many years ago, that after twelve o'clock at night, if they happened to be walking through the streets, they met with some very unpleasant smells. There were no sewers in those days. There were nothing but cesspools, and their contents were conveyed back to the land. It was an undoubted fact that our production

of food had been greatly diminished by carrying everything away to the river instead of employing it on the land. His late friend, Baron LIEBIG, entertained a very strong feeling on the point, and considered that it was an act amounting almost to suicide to waste that in the river which would produce the best crops, and go to Peru and other places to buy the excrement of birds, and bring it thousands of miles and pay a high price for it, to make good the wilful waste of manure at home. He hoped that the knowledge and common sense of the people would before long rectify matters.

THE CHAIRMAN hoped that Colonel HAYWOOD, who he observed was present, would favour the Meeting with some observations on the subject under discussion.

Lieut-Colonel HAYWOOD (Member) said he was afraid that he could add little that was of value to the discussion. Reference had been made to the Main Drainage Scheme and to the waste of the sewage of London. It should be remembered that, when the present Main Drainage Scheme was planned, (that of the northern side of the Thames having been designed by Sir JOSEPH BAZALGETTE and himself,) the whole and sole object was to get rid of the nuisance in the vicinity of the Metropolis and cast it forth elsewhere, leaving the consequences to be dealt with by those who were to be affected by it. At that time the population of London was not much more than half what it now was, and any nuisance caused by discharging the sewage into the river was proportionately less than at present. He was not prepared to say that, looking to the then state of knowledge, the Metropolitan Board of Works had done an unwise thing in relieving the heart of the Metropolis from the evils of the sewage. The population of the Metropolis was still increasing, and it was estimated would double itself in 39½

years, and the quantity of sewage discharged into the Thames would also be doubled. If discharging the sewage into the river were an evil now, it would be a greater evil then; and the time was probably not far distant when some other provision would have to be made: and his principal ground for the opinion was that he did not believe that the inhabitants lower down the river would submit for many more years to have the manurial matter of millions of people poured down to them.

Now, the sewerage question had been a subject of thought to him for the last 33 years. Fully 20 years ago, he came to the conclusion that the whole system was an error, and he thought so still. They were face to face with a dilemma, and it was this, that, wherever the water-closet system prevailed, this difficulty as to the pollution of streams also prevailed; but when, in order to avoid polluting streams, attempts were made to get rid of the sewage by drying, precipitation, or irrigation works, the endeavour met with all manner of opposition, and nobody was satisfied.

There was no other sound principle than that advocated by Mr. MECHI, viz., to return, in the shape of excrementitious matter, to the land, that which had been gathered from it in the form of food.

The time would probably come when the chemist would come to our aid, as on so many other occasions, and find a means of rendering fœcal matters unobjectionable for the time being, or, perhaps, of reducing them to a portable form for transfer to their proper place—the land, and without the addition of water at all. Meanwhile, we had got the water-closet system, with its 30 gallons of water per head per day, and the present question was how to get rid of this enormous quantity of polluted matter. There was an almost perfect consensus of opinion that the only thing to be done with it was to put it on the land, which would extract

from it all its valuable constituents, and return them in the shape of food, for man's use and this no doubt could be done without polluting streams.

The CHAIRMAN hoped that there were gentlemen present who could give them personal experience of successful sewage farming.

Mr. R. C. DRIVER (Member) said that Colonel JONES could give excellent information of the kind. He had had the pleasure of spending the day with Colonel JONES on his farm, which received the whole of the drainage of the town of Wrexham, and, from what he saw, he was convinced that a reasonable profit resulted from the operations. Colonel JONES was a practical farmer, and perfectly familiar with the management of land, and had devoted great attention to sewage matters. He believed that Colonel JONES could show a very favourable balance sheet, and trusted that he would give the Meeting information as to the financial results of his enterprise.

Colonel JONES explained that the information asked for had been published in Mr. BIRCH's Paper.

Mr. BIRCH wished to correct a statement made in his Paper with reference to Tunbridge Wells. As soon as that Paper was published, the Chairman of the Local Board wrote to him, finding fault with him for putting the Tunbridge Wells operations into the category of unprofitable enterprises. This gentleman (Mr. BROWELL) pointed out that this had in reality made a profit, and he (Mr. BIRCH) had asked him to show him his balance sheets. The fact was, that the table in his Paper was based on the *Blue Book*, which was wrong, as many *Blue Books* were, and Tunbridge

Wells should have been taken out of the list. It was one of the Local Boards which had made a profit, and he, therefore, gladly retracted what he had said with reference to it. He should be very pleased to find he was mistaken and that every other Local Board could make the same correction.

Mr. W. KEMPSON (Visitor) said he came from Leicester, a town in which for many years the question under discussion had been one of great interest, and still continued to be so. The present system of sewers conveyed the greater part of the storm waters, with the sewage, to the outfall, from which outfall, some feet below the bed of the river, it was pumped into the sewage works, excepting in time of flood, when it passed by an overflow into the river. Within the last few weeks, the Town Council had determined to lay down a system of storm-water sewers, estimated to cost £12,000, and were daily expecting the sanction of the Local Government Board for the scheme. They considered this separation scheme a necessary and preliminary measure to an efficient drainage scheme for the town and its suburbs, which included the water-shed of the district.

Mr. MECHI seemed to consider that the admission of the storm waters to the sewers was an unimportant matter, but he (Mr. KEMPSON) fancied that in making that remark he had in view the whole area of the kingdom. In the case of a town, one had to deal with a comparatively small area (say a few hundred acres), collecting a very large amount of storm water per acre. If the rainfall of the kingdom were spread equally over the country, it would be quite a different matter, and Mr. MECHI's observations would not be very wide of the mark. They believed, at Leicester, that they were simplifying matters greatly by separating the storm waters from the sewage.

He felt greatly indebted to Mr. BIRCH for his Paper, for this reason, that if his idea were carried out, and he thought it would be (for if farmers found they could obtain the amount of sewage they wanted at the time they required it, they would be glad to have it, and the authorities would thus find a market for the sewage) a great step in advance would have been made. He was interested in the management of the asylum land for the Borough of Leicester, the sewage of which was used on something less than thirty acres of land, and great advantage was derived from its use. One acre of kidney-beans on which sewage was applied three years ago, yielded £110. Using the sewage on grass land, where formerly they grew from a ton to a ton and a-half to the acre, they now got about three tons, and he believed farmers in the neighbourhood of Leicester would be glad to take a portion of the sewage. It was, he thought, very undesirable for towns to go into business as sewage farmers. They always lost money when they did so. Corporations could not manage those things satisfactorily, and the true way was to dispose of the sewage to those who could employ it profitably on their lands. Even Colonel JONES did not make sewage farming pay until he took the business entirely into his own hands. Agriculture in this country was not a very profitable business, and, with a rent of £8 or £10 an acre for the land, no profit could be made. At Croydon, for ten or twelve years, with their rent at £4 per acre, a profit was made, but when the rent got up to £10 they lost money; and he was satisfied that they would have done much better at Croydon, had the sewage and storm water been separated. The Leamington land was the best managed land he had seen—next to Colonel JONES'. That land had been profitable for the last three or four years, and had been paying the Earl of WARWICK well, but the Earl did not like publicity. He (Mr. KEMPSON)

had been informed by Lord WARWICK's agent, that they were doing exceedingly well, and he was convinced that the land which had been irrigated and brought into work had been improved to the extent of £1 an acre. Mr. BIRCH had done good service in showing that farmers could use the sewage to advantage, when they got it on reasonable terms. That it should be thrown into the rivers instead, and diverted from its true function of fertilizing the land, was a disgrace to the country.

Mr. A. O. SEDGWICK (Member) said that the gentleman who had just spoken would be interested to learn that the Local Board of Watford, of which he was a member, had managed to work the sewage of their town, which contained about 8,000 inhabitants, most satisfactorily, and he believed that their success was mainly due to the separation of the storm water from the sewage. As an agent he had endeavoured to make himself acquainted with what had been said and written on the subject, and he quite agreed with Colonel JONES that there was a babel of conflicting theories, which made it very difficult to judge which was the right way of dealing with sewage. He had come, however, to this conclusion, that the best way of dealing with the sewage was by irrigation.

Speaking of a scheme to which a client of his very much objected, the Government Inspector had said that they had tried to work the A B C into X Y Z, but sewage had gone in and sewage came out. This was, he believed, true of any of the systems of chemical treatment, without the aid of land as well as chemicals.

The sewage land at Watford amounted to between thirty and forty acres, and three years ago they managed the whole with something like a loss of £100, after paying interest on their loans, rent of land, and all other expenses.

Considering that they were dealing with the sewage of 8,000 inhabitants, he did not consider this a bad result. With more land, he believed that even better results would have been achieved. He felt certain that there were points of principal importance in arranging the sewerage of a town—separate storm-water sewerage, proper ventilation of the sewers, and means of flushing when needed. It should be borne in mind that the storm water always came at the wrong time, and means ought to be provided for flushing in the dry season.

Mr. E. BAILEY DENTON, Junr. (Visitor), wished to say a few words with reference to Colonel JONES's observations about storm water. He had the management of a sewage farm at Hitchin, and he found it utterly impossible to make a profit, owing to the admission of storm water into the sewers. Their farm at Hitchin was designed to receive 300,000 gallons of sewage, and a margin was left for 200,000 gallons of rainfall, or 500,000 gallons in all. This amount, however, was doubled in no time, and the consequence was that the seeds were all washed out of the ground, and the whole farm was liable to constant inundation. He was sorry to say that the same thing had happened again this year, and, as the result, no profit, which might otherwise have been counted on, was made. His experience also extended to Abingdon, where the storm waters were almost wholly separated from the sewage proper, and, as a consequence, the operations were thoroughly successful and yielded a profit, and the farm was now let at £4 10s. an acre. But, as had already been pointed out the exclusion of the actual storm water would not entirely, in every case, remedy the evils complained of, for in most instances the sewers were so imperfectly constructed that they admitted the subsoil water, which flowed

in in great quantities in the night time as well as in the day. It was, in fact, impossible to deal with sewage successfully, unless the amount of liquid received was a constant quantity, or varied only within reasonable limits, and the admission of subsoil water as well as storm water rendered intermittent treatment of the sewage, which was essential to success, a matter of difficulty.

Mr. H. U. McKIE (Visitor) was not an advocate for the separate system, so far as turning dirty water of streets and yards into a separate sewer was concerned, as the street scourings were almost as offensive as the drainage which came from the houses; and in populous neighbourhoods, the droppings and urine from horses and other animals were certainly as manurial as the sewage from houses, and quite as well worth collecting and putting on the land. A separate system to divide the sewage from houses from the drainage of streets and yards was wrong, and gave two foul channels, to be dealt with, instead of one.

If sewers were properly constructed, they should not admit the subsoil water, or let out sewage into the subsoil.

He quite agreed that there ought to be a separate system of drains for the clear subsoil water, and that it was as essential to health to have cities and towns freed from subsoil water, as it had been found beneficial to land and the animals grazing on it to have it thoroughly drained and ventilated.

He did not agree with Colonel JONES that the sewers would be too big if street water were admitted. It had been his custom for the last twenty-six years to make provision for storm waters by constructing storm-water outlets, which rendered large sewers unnecessary.

These smaller sewers would only admit of a known

maximum quantity being discharged at the outfall to be dealt with in irrigation, the only drawback being, that the surplus storm water was for a few hours at a time, and probably only for three or four times a year, discharged into rivers and streams when running full and rapidly, and could, if at all, be only a temporary pollution of them.

He quite agreed with Colonel JONES that the quicker sewage matter was removed from a town and applied to the land the better. There should be no fermenting tanks or other obstructions to its speedy removal, so that its application to the land before putrefaction took place should be insured.

He concurred with Mr. MECHI's views that the admission of storm water to the sewers did no harm, but good, if suitable storm-water outlets were provided, as it cleansed the sewers, and, when controlled as stated, was a great benefit to the irrigated land, especially in summer.

In Carlisle, for fifteen or sixteen years, the whole of the sewage was put upon 60 or 70 acres of land. There was no separation of the storm water in this case, and no inconvenience, so far as he was aware, had resulted. The admission of subsoil water was certainly undesirable, but, according to his idea, every species of polluted water should go into the sewer.

Mr. MECHI inquired whether the value of the land had been increased by the operation?

Mr. McKIE replied that it had been doubled in value. The first rent was, he believed, about £4 per acre. It was afterwards let at £8.

Mr. BIRCH, in reply, said he thought he might assume, on the whole, that the gentlemen who had spoken agreed

with the views he had advanced. He was pleased that Colonel JONES had mentioned the case of the gentleman who, it seemed, had been in the habit of stealing sewage. He believed it was far from being an isolated case, and that stolen sewage was often regarded as the sweetest; and many of the people who said least about it were secretly using it to their own great advantage. As regarded what had been said about the separate system and combined system, it should be observed that it was not the amount of dilution, but the irregularity of the dilution, which was the point of importance. The irregularity, as he had said at page 54 of his Paper, was not so serious to the grass farmer as to the arable farmer. He would like to see the separate system carried out as far as was practicable; and he would also like to see the power given of turning the brooks into the sewers, if necessary.

He could not agree with Colonel JONES that, under the combined system, the sewer gas was pumped by the storm waters into the houses. It must be remembered that, even when all the rain water was excluded, the daily irregularities of flow were often such as to raise the surface of the sewage in the sewer to such an extent as to make trapping perfectly impossible, unless the ventilation were perfect. Neither, with the separate or combined system, was it possible to make the flow of the sewer regular, do what one would. Mr. MECHI, in speaking about the Berlin operations, referred to the sandy soil in the neighbourhood of that city. He was himself inclined to think that sandy soil was the best for sewage farming; but there was a great difference of opinion on the point. Mr. WOODWARD, who had hired clay land in Cheltenham, and paid a good price for it, told him that sewage paid best on poor heavy hilly grass land, and made one acre worth five; and other correspondents held entirely different views, each one considering his land the best.

It was not to be wondered at that the Metropolitan Board of Works had failed to find people to go into sewage farming to a large extent. Was it likely that prudent persons would lend their money to any Board for any speculative purpose? To lend money to the Board on the security of the rates was another thing altogether.

It often struck one with wonder how, in sewage farming, such a large amount of manure could possibly be turned to account. But he was told that some very eminent Surveyors present had valued the manure for ordinary market garden crops, put on in the ordinary dry manner, at something like £30 or £40 an acre. If that were so, and it could be put on record, he thought it would encourage people who proposed to put money into sewage farming.

Colonel HAYWOOD had referred to the incessant opposition, on the part of the public, to every sewage scheme that *had* been carried out. He (Mr. BIRCH) thought the opposition was not to sewage schemes which *had* been carried, but to those which it was *proposed* to carry out. The people at Cheltenham had very little fault to find, for the operations there were properly managed. Anything that was mismanaged might be a nuisance, and sewage farming was no exception to the rule; but, if properly managed, it was no nuisance at all.

It was impossible to keep the whole of the street water out of sewers, and not only impossible, but undesirable to do so. One very common objection to the "separate system" was, that it would involve double cost. As a matter of fact, it did not involve anything like double cost. They must not be too exacting, or they would increase the strife which had hitherto stood in the way of improvement.

THE CHAIRMAN thought that the Institution might congratulate the advocates of sewage farming that the question,

although it moved very slowly, was nevertheless decidedly advancing. There was more agreement in the views enunciated this evening than on any of the many previous occasions when the subject had been discussed by the Institution. There appeared to be something like a general agreement that the proper way to dispose of sewage was to put it upon land; and, as there had always been some previous contention on this point, the perfect unanimity manifested on the present occasion marked a decided step in advance. There was also something approaching to unanimity (though only approaching it when two such authorities as Mr. MECHI and Colonel JONES did not quite agree) with reference to the "separate system." Mr. MECHI did not seem to attach much importance to the necessary separation of the storm water; whilst Colonel JONES was a strenuous advocate of separation. Mr. BAILEY DENTON, Junior, had made a useful contribution to the discussion, by giving his experience on the point. Mr. DENTON's observations went to show that, where the separate system was adopted, a profit could be made, but not otherwise. It was possible that some means would soon be found of reconciling these conflicting theories. It might be that the separate system was adapted to some places, and not to others where the cost would be too great. The whole question, after all, turned on profit, and if a profit could not be made without the "separate system," then have it by all means, and in this way the problem would be sure to work itself out in the long run. The opponents of the "separate system" should bear in mind that the question was one not of the amount but of the uncertainty in the amount of water if the rainfall were admitted to the sewers. It had been said, with perfect truth, that the farmers could take on an irrigated meadow a large quantity of water. But no one ever yet saw a piece of irrigated land where the water was not

under the control of the farmer ; while storm water was never under his control.

Another point on which there appeared to be substantial agreement was that the necessity of flushing occurred in dry weather, and that scientific means of accomplishing this object must be devised, either under the separate or the combined system. Colonel HAYWOOD had drawn practical attention to the necessity of providing for increase of population, and had estimated that the population of London would double itself in 39 years. He had himself very recently made an estimate and had put the increase at $2\frac{1}{2}$ per cent. per annum, which would double the population in 38 years. He was glad to hear that Colonel HAYWOOD so nearly agreed with him.

He was sure that the Members were much indebted to Mr. BIRCH for the trouble he had taken, and to the gentlemen who had favoured the Institution with their observations that evening.

The Meeting then adjourned.

THE RATING OF RAILWAYS,
WITH
SUGGESTIONS FOR THE AMENDMENT
OF THE LAW.

By THOS. FENWICK HEDLEY (MEMBER).

*Read at the Ordinary General Meeting of the INSTITUTION OF SURVEYORS,
December 9th, 1878.*

THE PRESIDENT IN THE CHAIR.

It has been said by an old writer, "To attempt anything for the improvement of useful arts is a debt that every capable person owes to the publick, all civil societies having a right to the property of private persons for the common good."

Assuming this maxim to be correct as to individuals, it must be equally applicable to an Institution such as this. I have, therefore, selected as the subject of this Paper "The Rating of Railways, with Suggestions for the Amendment of the Law."

The necessity for an amendment of the law of rating railways is evident from the complaints against the laws which are made by many of the chairmen of the "great companies" at their half-yearly meetings, and by the frequent appeals by Railway Companies to the Courts of Quarter Sessions against the assessments of their railways, and I hope

the consideration which the Members of this Institution may give to the subject, and the discussion which may arise upon it, may tend to the improvement of the law of rating this important and valuable species of property, which will be for "the common good."

When railways were first projected and constructed, it was doubtless expected that they would be worked in the same way as canals were worked—that is, that the railways would, like the canals, be open to the use of the public on payment of rates and tolls for the use of the railways, and that the persons using the railways would find their own engines and wagons, as persons using canals found their own horses and boats; and Parliament, in the Special Acts authorizing the construction of railways, provided that the overseers of the several parishes through which the railways passed should, during the first fourteen days in July and January in each year, have free access to the separate accounts of the Railway Companies of the rates and tolls received for the use of the railways. Heavy penalties were imposed upon the Companies in case of their neglecting to keep such separate accounts, and by "The Railways Clauses Consolidation Act, 1845" (8 Vic., c. 20) (which comprises in one general Act sundry provisions usually introduced into Acts of Parliament authorizing the construction of railways) it is enacted (Sec. 107) that the Company shall every year cause an annual account in abstract to be prepared, showing the total receipts and expenditure of all funds levied by virtue of this or the Special Act, for the year ending on the 31st day of December, or some other convenient day in each year, under the several distinct heads of receipts and expenditure, with a statement of the balance of such account duly audited and certified by the directors, or some of them, and by the auditors; and shall, if required,

transmit a copy of the said account free of charge to the overseers of the poor of the several parishes through which the railway shall pass, and also to the clerks of the peace of the counties through which the railways shall pass, on or before the 31st day of January: provided always that, if the said Company shall omit to prepare and transmit such account as aforesaid, if required so to do by any such clerk of the peace, or overseers of the poor, they shall forfeit for every such omission the sum of £20.

By Section 3 of the said Act, the expression "the Company" shall mean the Company which shall be authorized by the Special Act to construct the railway.

If the railways in England and Wales had continued vested in and worked by the Companies authorized by the Special Acts to construct them, the provision made by Parliament would have supplied all the information required for the purpose of assessing the railways, as the lengths of the railways usually constructed under Special Acts of Parliament were limited to districts within which the receipts and expenditure were sufficiently local to enable the overseers to obtain the information they required for the purposes of rating the railways in the different parishes through which the railways pass.

But these statutory provisions are now practically useless for the purposes of rating, as a large number of railways constructed under Special Acts of Parliament have been and are now vested in the "great companies" either by amalgamation, purchase, or lease, or are worked by these Companies under working agreements. The great Companies have also obtained from Parliament "running powers," or power to work over railways belonging to other Companies; and Railway Companies generally, not only receive rates and tolls for the use of the railways they own,

lease, and work, but also for the haulage and carriage of passengers and goods; and they carry on business not only as haulers and carriers of passengers, goods, and minerals on their railways, but also as common carriers by road. They possess, also, large stocks of engines, carriages, wagons, horses, luries, and carts; and several of the "great companies" are also owners and lessees of canals and docks, and ship owners owning and sailing large fleets of steamers, also builders of engines, boilers, carriages, and wagons, and manufacturers of iron and steel rails, and many other articles, and are also licensed victuallers, keeping large hotels and refreshment bars.

No separate accounts are said to be kept or published by the "great companies" of the rates and tolls they receive under and by virtue of the Special Acts authorizing the construction of the different railways or of the working expenditure of such railways; and when the Overseers require these Companies to transmit the accounts to them, in abstract, showing the receipts and expenditure of any railway which they have constructed under a Special Act, or which they have acquired from another Company by amalgamation, purchase, or lease, or which they are working under a working agreement, they transmit copies of the half-yearly reports of the directors and statements of the accounts which they issue to their shareholders, which accounts contain not only the receipts and expenditure of their entire systems, including many railways, but also the receipts and expenditure in respect of canals, docks, steamboats, hotels, and other matters not connected with the working of their railways. Nor do the accounts in many cases include the total traffic receipts of lines worked, or show the amounts paid and included in their working expenses for the lines they lease or rent, or the amounts they pay to the Companies whose lines they work under

working agreements, or the payments to the Companies for the foreign lines worked over; so that the accounts transmitted by the Companies to the overseers are practically useless for the purposes of the parochial assessment of the railways.

The London and North Western Railway Company's accounts may be taken as an illustration of the absorption and extension of railways constructed under Special Acts of Parliament.

This Company was incorporated by an Act passed in 1846, and was formed out of the London and Birmingham Railway, the Grand Junction Railway, and the Manchester and Birmingham Railway, which Railways were all constructed under Special Acts of Parliament.

The length of lines returned by this Company to the Board of Trade in 1852 was 624 miles.

The length of lines returned for the year 1877 is 1,661 miles, or an increase of 1,037 miles, which increase consists chiefly of lines bought up or leased, or rented, or since constructed under Special Acts of Parliament.

But from the mileage statement in the half-yearly reports and statements of accounts for the year ending 31st December, 1877, which were transmitted by the Company in reply to an application for information respecting the traffic receipts and working expenditure of some of their branch railways, the engines of the Company worked over 2,198 miles, viz:—

Lines owned by the Company	.	1,130	miles.
„ partly owned	. . .	48 $\frac{3}{4}$	„
„ leased or rented	. .	521 $\frac{1}{4}$	„
„ worked	. . .	55 $\frac{1}{2}$	„
Foreign lines worked over	. . .	442 $\frac{1}{2}$	„
Total	.	2,198	miles

And the revenue account shows the traffic receipts and working expenditure as follows :—

Traffic and other receipts .	£9,322,927	18	6
Working expenditure .	5,090,275	10	7
Balance .	£4,232,652	7	11

From these statements of accounts no information can be got of the receipts and expenditure of any particular railway constructed under a special Act of Parliament; and it is a well-known fact that this Company are extensive steamship owners, large manufacturers of iron and steel rails, rollers of iron and steel plates, builders of engines, boilers, carriages, and waggons, and keep several large hotels and refreshment bars, the profits or losses of which multifarious businesses and manufactories are all included in their accounts, and cannot on the face of the accounts be separated. Therefore the information supplied by the Company is useless for the purposes of assessment, and the intention of Parliament that the Railway Companies should supply the overseers with useful information is practically defeated.

THE PRINCIPLE OF RATING RAILWAYS.

Railways must be rated on the same principle as all other rateable hereditaments—that is to say, on an estimate of the rent at which the same might reasonably be expected to let from year to year, free of tenant's rates and taxes, &c., deducting therefrom the probable average annual cost of repairs, insurance, and other expenses, if any, necessary to maintain the same in a state to command such rent.

When the tenant of a hereditament undertakes to repair, insure, and maintain the same in a state to command the rent, no deduction from the rent must be made for repairs

and insurance, and the rent represents the net annual or rateable value, to which amount must be added the probable average annual cost of repairs and insurance to arrive at the gross estimated rental.

But the profits of trade are not rateable. And these are the principles which must be applied in rating Railways. If the receipts of Railway Companies had been derived, like those of Canal Companies, solely from "Rates and Tolls" for the use of the Railways, after deducting the expenses and the cost of repairs and maintenance, the only further deductions from the net receipts to arrive at the rateable value would have been an allowance for tenants' profits, which might either have been calculated, as in the canal cases, on the gross receipts or on the net receipts. But the traffic receipts and profits of Railway Companies include the receipts and profits for the haulage and carriage of passengers, goods, and minerals on their lines, and the collection and delivery of goods off their lines. The traffic receipts, therefore, include the profits of trade, of haulers and carriers on their lines and of common carriers off their lines, which profits of trade are not rateable. It is, therefore, necessary, in rating Railways, to eliminate from the profits of Railway Companies the profits of trade, which are not rateable, to arrive at the profits or rents of the Railways and works connected therewith, which are rateable.

The course usually adopted to arrive at the rents at which railways might reasonably be expected to let from year to year is to take the traffic receipts for the preceding year, and to deduct the working expenses, the balance or profit representing the amount to be divided between the hypothetical tenant and the hypothetical landlord. The hypothetical tenant's share of the profits is generally calculated by first estimating the amount of capital for working stock and

the amount of stores which a tenant would require to work the line, and to allow the tenant 5 per cent. for interest, and 10 per cent. for tenant's profits on the value of the working stock, and 10 per cent. for profit and waste on the value of the stores.

In addition to these allowances for interest and tenant's profits the Railway Commissioners allowed the London and North Western Railway Company 2 per cent. on the present improved value of their working stock *for depreciation*, although it was admitted that the working stock had been *improved and increased* in value, and *the costs of the improvements had all been charged to revenue*.

The Commissioners also allowed £50 per mile for renewal of the permanent way, although it was also admitted that the permanent way had been improved by substituting steel rails for iron rails, and by relaying other parts of the lines with heavier rails, and the costs of such substitutions and improvements were also admitted to have been also "*all charged to revenue*." Both these allowances are contrary to law, and to the principles adopted in rating other hereditaments. If a landlord of an estate expends his rents in improving his estates, no deduction is made in the rateable value of the lands in respect of such outlay, but on the contrary the lands are rated on their improved value. If, then, Railway Companies include in their working expenditure the cost of improving their working stock and permanent ways and such expenses are allowed from their receipts, no allowance should be made for depreciation of stock or renewal of ways; or if such allowances are made it should be on the depreciated value of the stock, and the working expenses should be reduced by the amount expended and charged in the receipts to revenue for improvement of stock and renewal of ways.

As the receipts of Railway Companies exclude all bad debts, and the working expenses include all losses or compensations paid, and also payments for the personal services of the directors and the salary of the general manager, and many other expenses not necessarily connected with the tenancy of the railways, I submit, with great confidence, that the deductions or allowances made from the profits of Railway Companies of 5 per cent. for interest and 10 per cent. for tenants' profits on the value of the working stock, and 10 per cent. for profit and waste on the value of the stores, to arrive at the rateable value of the railways, is most liberal to the Railway Companies. If the rating of agricultural lands, shops, warehouses, manufactories, and mines were dependent upon the profits of the occupiers, and such occupiers were allowed from their receipts all the losses they sustain and all their expenses, including their personal services, and the same per-centages on their trade or tenants' capital as are allowed to Railway Companies, scarcely any of these hereditaments in England and Wales would, in many years, be rated to the relief of the poor.

The rateable values of the railways having been ascertained on the foregoing principle, the next step is to apportion the rateable values to the several parishes in which the railways and works connected therewith are situate.

THE APPORTIONMENT OF THE RATEABLE VALUES OF RAILWAYS.

The rateable values of railways which consist of several parts, and which lie in several parishes, must be apportioned on the same principle as other similar hereditaments which consist of several parts and lie in several parishes.

The principle of apportionment is clearly explained in the judgment of Mr. Justice WIGHTMAN, in *R. v. West*

Middlesex Waterworks Company, in which case the learned judge said :—

“ If an apparatus, occupied by an occupier, consisting of
 “ several parts, lies in one parish, the rate is on the whole,
 “ and is received by that parish ; if such an apparatus lies
 “ in several parishes, the occupier is liable for the same
 “ amount of rateable value and no more It is clear
 “ that each parish must rate the part which lies within it,
 “ as such part becomes a separate rateable subject in that
 “ parish, and must be rated accordingly. Then, although
 “ each parish rate separately upon its own estimate of the
 “ value of the land lying within it, and the law gives no
 “ power of making all the parishes co-operate in rating the
 “ several parts lying in each, nevertheless this Court is
 “ bound to protect the occupier of such an apparatus from
 “ being rated beyond the rateable value of the whole, taken
 “ together, and it is with reference to this protection that
 “ the Court must take into its consideration, at once, all the
 “ separate rates as so many claims upon one common fund,
 “ and must apportion that fund, bearing in mind that every
 “ addition to the rateable value assigned to one parish must
 “ be a subtraction from the rateable value which might be
 “ given to some other parish.”

Railways consist of several parts, and lie in several parishes. There are the lines earning direct profits, and the stations, warehouses, and sidings earning no direct profits, but indirectly conducing to produce profit. But the parishes through which the railways pass, directly earning net profits, are not entitled to all the rateable values of the railways.

The parishes in which the stations, warehouses, and sidings earning no profit directly, are situate, cannot rate these works “ in respect of any rent in the ordinary sense
 “ (which is profit remaining after all deductions have been

“ taken from the receipts) ; but as these parts of the
 “ apparatus directly earning nothing, but indirectly con-
 “ ducing to such earnings elsewhere, are assumed to continue
 “ in operation, the Company to whose interest such con-
 “ tinued co-operation is essential must be assumed to pay
 “ adequate remuneration to a contractor for land, and fixed
 “ capital invested therein and these contractors
 “ with the Company would stand in the relation of occupying
 “ tenants in the parish, and the part within the parish
 “ would be the rateable subject, and the local rateable value
 “ would be such a sum as would pay the rent of the land,
 “ and the profit on the fixed capital therein.”

The rateable value of the stations, warehouses, and sidings having been ascertained on the principles laid down by the Court, and deducted from the aggregate rateable value of the Railway as a whole taken together, the balance represents the rateable value of the Railways *per se*.

There is no difficulty in estimating the aggregate rateable values of Railways as a whole taken together, nor is there any difficulty in estimating the rateable values of the stations, warehouses, and sidings, and deducting such values from the aggregate rateable values of the Railways as a whole taken together. It is the apportionment of the rateable value of the Railways *per se*, more particularly in rating the branch lines, which creates all the difficulties and gives rise to many of the complaints against the principles of rating Railways; and many of the branch lines, which are leased or worked by the “ great companies,” are said to be “ *worked at a loss.*” It is admitted that the object of the “ great companies ” in leasing or working such branch lines are :—

- 1st. To secure the traffic of such branch railways as feeders to their main lines, by which increased

Upon the authority of these two last cases the Railway Companies have contended that their branch lines must be rated on what they call the parochial earnings and profits, and the following summary of the valuation of part of the Knighton Railway in the Ludlow Union, which was put before the Shropshire Court of Quarter Sessions, in 1872, by the London and North Western Railway Company, illustrates the principle adopted by the Railway Company in valuing branch lines :—

Traffic receipts per mile . . .	£930	0	0
Working expenses, including main- tenance and renewal of ways and works	713	7	8
Profit per mile	£216	12	4
Allowances to tenant for interest, profit, and depreciation .	£495		
Value of stations, &c., sepa- rately rated	54		
	—	549	0 0
Excess of deductions claimed beyond receipts	£332	7	8

The Company contended that they ought only to be rated on the agricultural value of the land taken for the railway, to reimburse the parish for the loss they had sustained by the land being used for a railway.

The Knighton Railway was constructed by the Knighton Railway Company, and was originally worked, managed, and maintained, and working stock supplied, by the London and North Western Railway Company for 50 per cent. of the traffic receipts. If this railway had continued vested in the original Company, it could have been worked,

managed, and maintained, and working stock supplied either by the North Western or the Great Western Railway Companies for 45 or 50 per cent. of the traffic receipts; but the Company alleged that the cost of working the line was equal to 76 per cent. of the receipts, and that a tenant would require at the rate of £495 per mile as interest and profit on his tenant's capital for working the line. In other words, if the tenant had to pay the rents for the stations, he would require the landlord of the line to give him the line rent free, and pay him £332 7s. 8d. per mile, per annum, for taking it, to earn a profit of £216 12s. 4d. per mile, per annum. Yet in the face of these facts, which were well known to the North Western Company, and before the hearing of the appeal, when these extraordinary figures were put before the Court, the North Western Company had undertaken to pay the share and debenture holders of the Knighton Railway dividends and interest equal to £550 per mile for the line, and had also expended £40,000 on doubling about 12 miles of the line.

RATING RAILWAYS AS AGRICULTURAL LAND.

The contention of the Company, that they should be rated on the agricultural value of the land taken for their branch railways, is contrary to the decisions of the Queen's Bench in the Cannock case, and of the House of Lords in *Whitechurch and others v. The East London Railway Company* (confirming the judgment of the Court of Exchequer), "that when a railway is completed, it is liable 'to be assessed as a working railway.'"

But the decisions in the Haughly and Llantrissant cases which lead to such absurd results, as are shown in the valuation of the Knighton Railway, have been seriously questioned, if not practically overruled, by the Courts in

the Bedford or Kempstone case, where the London and North Western Company became possessed of a branch line, communicating with their main line, on the terms that the shareholders of the Company by whom the line was made should become stockholders in the appellants' Company to an amount calculated as the expense of making the line. This branch line communicated with the lines of three other Companies, and the appellants worked the branch at very low fares in order to divert the traffic from the other lines on to their own line; the consequence being that the sum actually earned on the branch line was very small. If the branch line were in the market, either of the three other Companies would, in consequence of the traffic which it would bring to their line, be willing to acquire it on the same terms, in every respect, as those upon which the appellants held it, and would then work it in a similar manner to that in which it was worked by the appellants:—It was held that, “in assessing to the poor rate a part of “ the branch line passing through respondents' parish, that “ the fact that three other Companies would be willing to “ pay what was equivalent to a large rent for it, was to be “ taken into account as an element in ascertaining the rent “ at which it might reasonably be expected to let from year “ to year.”

The decision in the Bedford case practically applies to rating branch railways “worked at a loss,” the same principles which are adopted in rating other hereditaments,—that is, that although the rent actually paid for the railway may not represent the net annual or rateable value, but the rent which other Companies would be willing to pay for it, it was to be taken into account as an element in ascertaining the rent at which it might reasonably be expected to let from year to year.

In valuing part of the Northampton and Peterborough Branch Railway, in the Wellingborough Union, belonging to the London and North Western Railway Company, the traffic receipts of this part of the line were given to me by the Company at £1,289 per mile, and the claims of the Company for working expenses and tenants' profit exceeded the traffic receipts; thus showing, according to the Company's statement, that the line was "worked at a loss." But I found that another branch line belonging to the Kettering, Thrapston, and Huntingdon Railway Company, running nearly parallel with the branch line belonging to the London and North Western Railway Company, and earning about the same traffic receipts per mile, was worked, managed, and maintained, and working stock supplied by the Midland Railway Company for 50 per cent. of the traffic receipts.

I therefore adopted the principle laid down in the Bedford or Kempstone case, and disregarded what the London and North Western Company alleged to be the cost of working their branch line, and the amount of the tenants' capital employed by them in working the line, and the deductions claimed, and considered what the branch line might reasonably have been expected to be worked, managed, and maintained, and working stock supplied for, if it had been vested in another Company. Looking at the increased cost of working railways in 1874, I estimated that the line could readily have been worked, managed, and maintained, and working stock supplied under a working agreement for 55 per cent. of the traffic receipts, which left 45 per cent. of the gross receipts as net profit, and I deducted from the net receipts for tenants' profits 10 per cent. of the traffic receipts, and for stations separately assessed $5\frac{1}{2}$ per cent. of the traffic receipts. The following is a copy of the estimate I put before the Court:—

Traffic receipts per mile	£1,290
Estimated cost of working, managing, and maintaining the line, and supply- ing working stock at 55 per cent. of the traffic receipts	709
Net receipts	<u>£581</u>
Allow for tenants' profits at 10 per cent. on the traffic receipts	129
Rateable value, including stations .	<u>452</u>
Less value of stations separately assessed	<u>74</u>
Rateable value of line per mile	<u><u>£378</u></u>

At the close of the case, the magistrates retired to consult, and on their return into Court, the Chairman (the late Right Honourable GEORGE WARD HUNT, M.P.) said, We have “come to the conclusion, on the authority of the “case in Bedfordshire, that we ought to take into con- “sideration the question as to whether the line might “reasonably be expected to let on the principle which was “enunciated by Mr. HEDLEY, that is, at 55 per cent. of the “traffic receipts under an agreement; we have had his “evidence that that is a reasonable agreement, and a “common one, and that there is a line worked in the same “neighbourhood upon that basis, and, therefore, we consider “that the line might reasonably be expected to let on these “terms. We are prepared, therefore, to dismiss the appeal, “but to grant a case if desired, but at the same time to say “this, that, supposing the parties like to argue the case “further, there is a question as to what should be the “deduction for tenants' profits. Mr. HEDLEY calculates the “tenants' profits at 10 per cent. on the traffic receipts, or

“ £129. There is a question as to that deduction of 10 per cent. on traffic receipts. It was not discussed at all by the counsel for the appellants; he assumed that the decision would be given absolutely one way or the other. Supposing the counsel for the appellant wishes to contend for a higher figure than that, we should be willing to hear him.”

The question of tenants' profits was not argued by Mr. STAVELY HILL, Q.C., but he asked for a case for the opinion of the Supreme Court of Judicature, which was granted, and the case was approved by Mr. HILL, for the appellant, and by Mr. GEO. SILLS, for the respondents, and argued before the Queen's Bench Division on the 6th May. The Court “held the L—— Railway was rightly rateable at 45 per cent. of the gross receipts.” Mr. JUSTICE BLACKBURN said, in his judgment, “Where there are no direct rateable profits, the line in a parish is liable to be rated on the basis of receipts derived from traffic on the other parts of the line; and this is the test of the hypothetical tenants' rent.” This decision and the decision in the Bedford and Kempstone case practically revive the principle of contributive value laid down in the Haughley and Cannock Chase cases, and confirm the cases deciding that Railway Companies cannot be rated only on the agricultural value of the lands occupied by railways which are “worked at a loss.”

OBJECTIONS TO THE PRESENT SYSTEM, AND SUGGESTIONS FOR THE AMENDMENT OF THE LAW.

It will be seen, from the foregoing observations, that the objections attending the rating of railways arise chiefly from the following causes:—

1st. From what is called the parochial principle of rating, which means that every few chains of a railway in a

parish are to be treated as a separate hereditament, and to be valued as if a separate railway.

2nd. From the "law giving no power of making all the parishes co-operate in rating the several parts lying in each" parish, so as to protect the occupiers of such works as railways from being rated in the different parishes beyond the rateable value "of the whole taken together."

3rd. From the conflicting decisions of the judges, and the "glorious uncertainty of the law."

Whatever differences of opinion may exist as to the continuance of the parochial areas as the units for local government and local taxation of such properties as existed when parishes were formed, it must be admitted that the railways in England and Wales now in the hands of "the great companies," and which extend over many hundred miles and pass through thousands of parishes, have outgrown the parochial divisions, and therefore the parochial principle of rating railways ought not to be continued.

It must also be admitted that the occupiers of such works as Railways ought to be protected by legislation from being rated beyond the fair rateable value of their property as a whole taken together, and that all doubt and uncertainty as to the law ought to be removed, and the principles of rating such works settled by Parliament.

Parliament has already, by express enactment, provided for the rating of railways and canals in Scotland. By the Act for the valuation of the lands, buildings, and heritages in Scotland (17 and 18 Vic., c. 9), Sec. 20, it is provided that Her Majesty shall appoint, as occasion requires, a fit and proper person to be assessor of railways and canals; the remuneration of the assessor and his clerks to be fixed by Her Majesty's Treasury. Section 21 directs the assessor, on or before the 15th day of August in every year, to in-

quire into and fix *in cumulo* the yearly rent or value of all the lands and heritages in Scotland belonging to or leased by each Railway and Canal Company, and also to inquire into and fix the amount required, in order to the acquisition, formation, and erection of the several stations, wharves, docks, depots, counting houses, and other houses and places of business respectively connected with each such undertaking (including the *solum* on which such stations and others are erected).

Section 22 provides for the apportionment of the *cumulo* yearly rent, or value of the whole, in the following manner:—

“There shall be deducted, in the first place, from the
 “*cumulo* yearly rent, or value of the whole lands and
 “heritages in Scotland, a sum equal to 5 per cent. per
 “annum of the whole cost as aforesaid of the stations,
 “wharves, docks, depots, counting houses, and other houses,
 “and places of business in Scotland, and the proportion of
 “such diminished *cumulo* rent, or value corresponding to
 “the lineal measurement of the portion of the line as com-
 “pared with the lineal measurement of the entire line (with
 “the addition of the value of the stations and other works,
 “if any, in the parish), shall be deemed and taken to be
 “the yearly rent or value of the lands and heritages (*i.e.*,
 “the railways, stations, &c.) in such parish.”

Section 26 gives the assessor power to require the attendance of any persons as witnesses, and to examine them on oath, and to call upon the Railway Companies for detailed statements of the yearly revenue and the cost of stations, &c., and the lineal measurement of the whole or any part of their lines.

Section 29 provides for the payment of the assessor's salary and expenses, by the Railway and Canal Companies, rateably.

The principle laid down by Parliament in the Valuation Act, for rating the Railways in Scotland, and the directions to the assessor first to find the *cumulo* value of the whole of the undertaking, and then to deduct the value of the stations and other works, and the mode by which the value of the stations and other works have to be ascertained, are precisely the same principles as those laid down by the Judges for rating the Railways in England and Wales, and the assessor in Scotland finds the *cumulo* values of the Railways by deducting from the net receipts of the Railway Companies allowances for interest and tenants' profits upon the tenants' capital required for working the lines, which is the same principle as the valuers adopt in valuing the Railways in England. The only difference between the Statute law for Scotland and the law as laid down by the Judges for rating Railways in England is, as to mode of the apportionment of the diminished *cumulo* values, or the rateable values of the Railways, *per se*.

In Scotland, the diminished *cumulo* value is apportioned by a mileage rate equally over the whole lines, which is a simple process.

In England, the railways in each parish have to be treated as separate railways, which is a difficult process, and both systems of apportionment are objectionable.

The mileage principle in Scotland assigns to single branch lines, passing over barren moorlands of little value, with small traffic, the same rateable value as the double lines with heavy trains and large traffic, passing through the valuable lands in large towns and cities, which is unfair to the large towns. In England the "parochial principle" of apportionment has just the opposite effects, and assigns to the parishes in many cases through which the branch lines pass a negative value or no value as railways, and to the parishes

through which the main lines pass all the values, which is unfair to the parishes through which the branch lines pass

It is impossible in England and Wales to get all the overseers of the parishes through which the Railways pass. to co-operate in rating the several railways lying in each parish.

The overseers of Paddington, Penzance, and Milford, and the intervening parishes, could never be got to co-operate in rating the Great Western Railway, and the same difficulties exist in rating the lines belonging to the other great Companies; therefore, the only practical amendment of the law of rating railways that could, in my opinion, be made in England, is by the appointment of an assessor by the Crown to value all the railways in England and Wales, with similar powers to those conferred upon the assessor in Scotland, or, what perhaps would be more congenial to the English taste for "local government," the appointment of assessors might be made by the Courts of Quarter Sessions for the different counties in England and Wales, and statutory provision might be made for the county assessors co-operating in valuing and apportioning the rateable values not only of railways, but also of canals, gas and water works, and mines, many of which hereditaments extend into different counties. Parliament might also, with great public advantage, make the "Judge-made Laws" the statute law of England for finding the rateable values of the railways as a whole taken together, and also for estimating and deducting the annual values of the stations and other works connected with the railways, and the rateable values of the railways *per se* might, in my opinion, be apportioned amongst the several parishes through which they pass, either by a percentage of the traffic receipts earned in each parish—such percentage to be calculated according to the percentage which the total rateable value

of the railways *per se* bear to the total traffic receipts of the railways—or by another process which would avoid the trouble and difficulty of taking out the traffic receipts or earnings in each parish. This might be done by reducing the lengths of the lines of each system open for traffic to the length as a single line, and by adding to the length of the railway, as a single line, all the sidings, and dividing the aggregate rateable value of the railway *per se* by the total length of the single line and sidings, which would reduce the rateable value of the railways and sidings to a mileage rate as a single line. The rateable value of the railways and sidings in each parish could then be calculated at the rate per mile on the lengths of the railway as single line, and the lengths of the sidings in each parish, by which means the parishes having railways “with double or more” sets of rails would be rated according to the number of sets of rails, and as the traffic increased, and lines and sidings were added, the rateable values would be increased accordingly, and the anomaly which exists in Scotland would be avoided.

In my opinion the salaries and expenses of the assessors, whether appointed by the Crown or Courts of Quarter Sessions, ought not to be paid rateably by the Railway Companies, but by the parishes through which the railways pass.

There are many observations which I would like to have made as to what traffic receipts and what working expenses ought to be included or excluded, and what should be treated as tenants’ capital, and how and what allowances ought to be fixed for interest and tenants’ profits; but I feel that this Paper has exceeded the length I originally intended. I therefore conclude by again expressing the hope that the attention which may be directed to the subject by this Paper may be for the “common good.”

Mr. T. SMITH-WOOLLEY (Vice-President) said that he was not sufficiently familiar with Railway Rating to take any prominent part in the discussion, but he had much pleasure, as a Member of the Council, in proposing a vote of thanks to Mr. HEDLEY, for having undertaken the production of a Paper on this interesting and important subject.

Mr. E. J. CASTLE (Associate) had much pleasure in seconding the vote of thanks. The subject was one on which there had been many discussions, but he was hardly able to deal with it at such short notice. One of the many difficulties with which it was surrounded had not been dealt with in the Paper, nor did Mr. HEDLEY's propositions cover it in any way—he alluded to the inequalities of traffic, which necessarily existed in every railway system. It was all very well to propose the adoption of a simple method like the Scotch system, of valuing a Railway as a whole, and then cutting it up in proportions of mileage: to take a parish in some outlying part of the country, and say, “There are three miles of railway, which we have valued as a whole at £100 per mile, and although this section of the line does not pay its working expenses, the rates payable in respect of it shall be £300 for the three miles.” But how would such a system, if applied uniformly, operate in the case of a great main line bringing the whole traffic to the centre of the Metropolis? Would it not be regarded as unfair to a London parish, if it were said, “We have valued the line as a whole at £100 a mile, and all you are entitled to is £75 for the three-quarters of a mile in your parish?” Such a state of things would not be tolerated. Parish property was to be rated locally, and everyone in the parish liable to rating was to contribute to the relief of the poor, according to the value of his property within

the parish. Assume, for instance, a piece of land which produced so many turnips, or so much corn, or carried so much traffic as a railway. This piece of land had a certain ascertainable value for either of these uses, but to compare it, for purposes of rating, with a similar piece of land similarly used elsewhere would be altogether inequitable, and impossible in practice. It was all very well so long as people were content with an uniform system, like the Scotch system, but disturb the principle in any way, and there was nothing for it but to come back to the method of assessing each portion of the line with regard to its value in the parish. This system had prevailed for many years, and he trusted would continue.

Mr. W. P. PAYNE (Associate) was desirous, as a representative of one of the Railway Companies, of taking part in the discussion, but was unprepared to do so without previously perusing the Paper. He hoped, therefore, that the discussion would be adjourned until the next Meeting.

Mr. E. RYDE (Vice-President) said that, unlike his friend, Mr. SMITH-WOOLLEY, he could not say that he was unfamiliar with this subject. He had not been able to gather, from merely hearing the Paper read, what were the precise defects in the law which Mr. HEDLEY thought should be remedied, or what he proposed by way of a practical solution of the difficulties to which he had referred, and should, therefore, propose the adjournment of the discussion, in order that he might have an opportunity of doing justice to the Paper. If he might be permitted to do so, without anticipating what he might wish to say at a subsequent Meeting, he would like to offer a few suggestions, which might tend to direct

the minds of those who would take part in the adjourned discussion to the real questions for consideration.

Now, they were either going to discuss the desirability of altering the law of rating, *i.e.*, to apply one law of rating to all hereditaments except railways, and another law of rating to railways; or the desirability of retaining the present system, which was, shortly, this—that every hereditament, whether a railway, a canal, an hotel, or a set of offices, should be rated to the relief of the poor at such an amount as it might reasonably be expected to let at. The gross rent was the rent the yearly tenant would pay, and the net rent was that which went into the landlord's pocket. That was the law of rating. If all real property was to bear the burden of maintaining the poor, was there anything better to be suggested, as a mode of levying the rate for that purpose? That was the question. Whether real property should bear the whole of the burden, or personalty, *viz.*, property in the funds, should bear some of it, was, of course, another matter altogether. What was now proposed for discussion, was an alteration in the law with regard to railways, and railways only.

The proposition of Mr. HEDLEY, if he understood it rightly, was that every railway was to be rated as a whole, and not in each parish as was now the case. Now, he had in his mind a farm which, at the present moment, was rented at about 40s. an acre all round. Some of the land comprised in it was very good arable, some very good meadow land, and some very poor land on the borders of a heath. The heath land itself was situated in another parish. As he had said, the average rent of the whole was 40s. per acre, but the heath land was not worth 5s. an acre? Was the heath land to be rated at 40s. in the parish in which it was situated, and the good land in the other parish at the

average rate of 40s., when it might be worth 60s. The proposition to rate the wealthy main line at the same amount as the poor branch line was the same thing in principle, and it was this proposition which was before the Meeting for discussion. The law was said to be bad, because, for instance, it was condemned as such by the chairmen of Railway Companies, at their half-yearly meetings; but was this the way to test the law of England? Every chairman believed that his railway was over-rated, and every parish through which the railway passed believed that the railway was not rated high enough; but there must be some better reason than this before people would be persuaded that a law which fulfilled its object should be amended.

The Scotch law of Railway Rating had been referred to. His attention was first drawn to the Scotch law by a visit from a gentleman, who called on him, with a letter of introduction, to ask him how to rate a railway, adding that he had just been appointed to rate the Railways of Scotland. It seemed an odd thing to appoint a gentleman to rate railways who had no previous experience; but, be that as it may, the gentleman had held the post ever since, and had, he understood, given great satisfaction.

There were, however, very few he thought who would be willing, whatever amendment might be made in the law, to see the Scotch system introduced, either in the interest of railway companies or of parishes.

The author of the Paper had referred to the furnishing of accounts by the railway companies for rating purposes. It was very difficult to say what the earnings of the various portions of a line really were. Take a branch line. Who could say what were the earnings of that branch line without some defined principle to go upon? A passenger

might take a ticket, enabling him to travel over the branch line, over 50 miles of the main line and, perhaps, over two other branch lines, and might have a return ticket, which enabled him to go back by another line. The question, in fact, was getting more complicated every day, and, as he had said, some definite principles were indispensable. The principle long adopted (known as the "parochial earnings principle") was practically this,—Suppose a man travels one hundred miles and pays 100*s.* Every mile over which he travels earns 1*s.* a mile. If one hundred people travelled over one mile, 100*s.* were earned on that mile, but if five travelled, only 5*s.* would be earned on that mile. In fact the whole thing resolved itself into the present system—What was the value of the line and what might it reasonably be expected to let at?

Then came another consideration. If there was anything in the theory, that if a branch line contributed to the earning of the main line some deduction should be made for such contribution, the line in respect of which the deduction was made would claim to have contributory power. It would be urged on behalf of the main line that it was nonsense to talk about the branch line contributing to it—that the main line was the feeder, and the branch depended on it entirely. To reduce the thing to an absurdity, it might be claimed that the whole thing depended on some little bridge over a stream, and that it had a contributive value, without which the line would be able to earn nothing.

He had merely thrown out these suggestions in order to direct attention, at the next Meeting, to the real issues involved. If the law wanted altering, the Members of the Institution were the best fitted to indicate the nature of the amendment required; and if, on the other hand, the existing system was found to answer the purposes in view, no body

of men were more qualified to express an authoritative opinion to that effect.

The vote of thanks having been put to the Meeting and carried unanimously, and acknowledged by Mr. HEDLEY, the motion for adjourning the discussion was also put and agreed to.

THE RATING OF RAILWAYS.

(No. 2.)

OBSERVATIONS ON TRAFFIC RECEIPTS,
WORKING EXPENSES, AND TENANTS' CAPITAL.

(Supplementary to the Paper read at the Meeting of December 9th, 1878.)

By THOS. FENWICK HEDLEY (MEMBER).

*Read at the Ordinary General Meeting of the INSTITUTION OF SURVEYORS,
January 6th, 1879.*

EDWARD RYDE, VICE-PRESIDENT, IN THE CHAIR.

TERMINAL CHARGES.

In the Paper which I read at the last Meeting, I stated that there were many observations as to what traffic receipts and what working expenses ought to be included in or excluded from the receipts and expenditure for the purpose of rating railways, which, had time permitted, might have been included in that Paper. The adjournment of the discussion on my Paper until the 20th instant has afforded me an opportunity of addressing to you a few observations on terminal charges.

The traffic receipts of Railway Companies include "station terminals," "cartage terminals," and "parcels terminals."

The "station terminals" are charges for the use of the

Companies' stations, and for the services rendered by the Companies' servants at the stations.

The "cartage terminals" are charges for the collection and delivery of goods and merchandise,—that is, for bringing goods and merchandise from manufacturers or traders' premises to the railway stations to be conveyed by railway, or for delivering goods and merchandise which have been brought by railway to the stations, to the manufacturers' or traders' premises.

"Parcels terminals" are the charges for delivering parcels to the places to which they are addressed.

The "station terminals," being earned on the Companies' lands, are clearly rateable, and there can be no doubt that the probable amount to be received for station terminals would influence the minds of the parties to a negotiation as to the amount of rent to be asked or given for the railway stations; but the superior courts have decided that the station terminals are to be treated as part of the general earnings of the railways, and that the stations are to be treated as only indirectly contributing to the profit of the railways, and to be rated in the manner explained in my Paper. The station terminals must therefore, for the purposes of assessment, be included in the traffic receipts of the railways.

The "cartage terminals" and "parcels terminals" are not earned on the Companies' lands, and the amounts received by the Companies under this head are for services as common carriers by road, for the carriage of goods and parcels *off their lands*.

In considering this question the following explanations of the terms "foreign traffic" and "local traffic" may be of assistance to those who are not acquainted with the technical expressions used by Railway Companies.

“Foreign traffic” means traffic originating, or terminating on, or passing over lines belonging to other Railway Companies than those on whose lines it terminates or originates, as the case may be, and the receipts in respect of such traffic are apportioned by the Railway Clearing House to the Railway Companies over whose lines the traffic has passed.

“Local traffic” means traffic originating and terminating on lines belonging to one Company, which Company receives the whole of the receipts for the traffic. These receipts do not pass through the Clearing House.

CARTAGE AND PARCELS TERMINALS.

I can find no judicial decision as to whether the receipts for these “terminals” should, for assessments, be included in or excluded from the Railway traffic receipts. Mr. J. H. BALFOUR BROWNE in his book, “On the Principles of the Law of Rating,” &c., writes: “A question has arisen as to whether the amount which a Company earns in the shape of ‘terminals’ is to be included in the gross receipts of that Company for rating purposes, and there is no doubt that the Great Amwell Case decided that they should, and upon the clear ground that they were as much beneficial results of the occupation of the ground as the fares and tolls were of the occupation of the line.” I suppose, from the employment of the term “results of the occupation of the ground,” that Mr. BROWNE means that the “terminals” should be rated because they are received in respect of the use of the lands belonging to the Companies; but it cannot be said that “cartage

terminals" are the result of the occupation of the ground or land belonging to the Company or accruing to the Company directly from their occupation of land, unless such "terminals" include charges beyond those made under the head of "station terminals" for loading or unloading goods on the Company's land.

Mr. BROWNE (p. 108) writes: "Many have thought that "the Great Amwell Case was an authority for saying not "only that terminals proper must be brought into the gross "receipts, but that the receipts due to the collection and "delivery which is performed by a Railway Company "were also to be included. A few sentences from the case "submitted to the Court of Queen's Bench will, however, "make it evident that the Court must have used the word "'terminals' in its restricted or limited meaning;" and at page 109, he adds: "It seems certain then that the Court used "the word 'terminals' in its correct and technical meaning, "namely—the 'station terminals' which are earned upon "the Company's lands." And Mr. BROWNE (p. 110) writes: "But it (the Great Amwell Case) said nothing "about the receipts, which the Railway Company received "upon 'carted rates,' in addition to those which were "remunerative of transit and station services; it did "not decide whether the amount which a Company received "for collection or delivery should also be included in the "gross receipts, or whether the expenses attendant upon "such collection and delivery should be treated as one of "the necessary expenses," and adds (p. 113): "The principle "which is to guide us in this question is this, that only "what accrues to the Company directly from their occupation of the land or hereditaments is to be taken into "consideration."

“The cartage and parcels terminals” are certainly not earned on land in the occupation of the Company, but are earned in the carts, luries, and vans in the public streets or highways, of which the Company have not the “exclusive occupation,” and the profits of collecting and delivering goods and parcels may arise in parishes in which the Railway Companies neither possess lands nor hereditaments; and any charge included in the “cartage terminals” for unloading or loading goods on or at the manufacturers’ or traders’ premises cannot be construed to be results or earnings from the occupation of the ground or land belonging to the Company; therefore, such receipts ought to be excluded from the traffic receipts in rating railways.

Suppose PICKFORD & Co. collected and delivered the goods and parcels for the Railway Companies: PICKFORD & Co. would be rated in respect of the land and for the offices, warehouses, stables, cart and wagon sheds, and other buildings occupied by them, without reference to the profits derived from the collection and delivery of goods and parcels, and a different principle of rating Railway Companies cannot be adopted simply because they deliver and collect the goods and parcels by means of their own horses, carts, luries, and vans.

It may be said that a tenant of a railway would give an increased rent for the line, in consideration of the profits to be derived from the “cartage terminals.”

This principle was practically contended for in rating breweries, where the occupiers of the breweries possessed “tied houses,” or the monopoly of supplying beer to certain public houses. The Sunderland Union Assessment Committee increased the rateable values of several breweries, in consideration of the brewer having a number of public houses,

the occupiers of which houses were all bound, by covenants in their leases, to purchase the beers they sold, at the owners' breweries. But the Court of Common Pleas held, in *Sunderland Overseers v. Sunderland Union*, 18 C.B. (n.s.) 531, that the breweries were not rateable for the increased profit derived by reason of the fact that the occupiers of the public houses were under obligation to purchase their beers at the breweries, and that the breweries ought to be rated on the same principle as other properties. So also, in my opinion, should Railway Companies be rated for their stables, cart, lurry, and van sheds, and other buildings connected with the collection and delivery of goods and parcels, in the same manner as other similar properties are rated, and as PICKFORD & Co. would be rated, and without reference to the profits derived from the "cartage and parcels terminals."

The question of "cartage terminals" was raised before the Railway Commissioners in the recent rating cases of the *Manchester, Sheffield, and Lincolnshire Railway Company*, and *The Trent and Ancholme Railway Company v. The Caistor and Glandford Brigg Unions*. Mr. B. BROWNE in his note on the case says (p. 110): "That the Company, "in calculating their gross receipts in the Parish, claimed "to deduct the receipts which appeared in the gross amount "of their receipts in their half yearly balance sheet, but "which were due to services performed by them as common "town carriers of goods to and from the railway stations."

Mr. BROWNE (p. 111) reports this case as follows: "It "had been decided by the Railway Commissioners, in the "*Buckfastleigh Railway Company v. the South Devon "Railway Company*, that the receipts from cartage and "delivery stand apart from the receipts accruing from the

“ line, and are in their nature something different from the “ railway receipts, properly so called ;” and, with reference to the objection of the parish, that the deduction was too favourable to the Company, they (the Commissioners) gave judgment in the words hereinafter quoted.

On referring to NEVILLE and McNAMARA’s Reports, I find that the case of the *Buckfastleigh Railway Company and The South Devon Railway Company* (I. Vol., p. 321), quoted by Mr. BROWNE, does not relate to railway rating, as would be inferred from the way in which it is quoted, but to the apportionment of certain rates between two Railway Companies under a working agreement; and in which case one of the questions before the Commissioners was, as to the allowance for cartage, or the apportionment of terminals between the two Companies.

I have also referred to NEVILLE and McNAMARA’s Report of the Railway Rating Cases before the Commissioners, and I find (II. Vol., p. 53) the head-note to the report to be : “ Held terminals (station terminals) must be “ brought into the gross receipts, and confined to the line of “ railway that earns them,” but that “ collection and delivery, “ strictly so called, form no part of terminals or terminal “ service, and being performed off the line should not in “ any way be brought into the accounts for rating purposes. “ Where, therefore, it is included in the rates for conveyance, “ as in carted rates, the cost of the service and reasonable “ profit thereon should be deducted from them in the gross “ receipts, and no receipt or expenditure relating to them “ should appear in the accounts.”

This is very clearly expressed, and confirms the principle suggested. But in the judgment in the Trent and Ancholme Case (p. 62), the Commissioners said : “ As to through traffic,

“the receipts brought to account half-yearly would be
 “mileage receipts only, and would include no station or
 “cartage terminals due to other Companies ; and as regards
 “other traffic the Company admit that they perform no
 “cartage ; we also think that whatever part of a goods rate
 “covers ordinary station work at a terminus should all be
 “taken to be receipts of the line to which the terminal
 “station belongs ;” they also added some observations on
 the mode of apportionment of the terminal rates between the
 foreign line and the local line, but the observations refer
 to “station terminals” and not to “cartage terminals.”

In the Manchester, Sheffield, and Lincolnshire Case
 (page 65), the Commissioners said : “The gross receipts in
 “the parish are ascertained by dividing the gross rates,
 “by mileage between the forwarding and receiving stations,
 “after deducting, in the case of merchandise traffic, the
 “amount charged at each end for collection and delivery.
 “The respondents object to this mode of calculating the
 “receipts from the merchandise, as too favourable to the
 “Company. We see no objection to it where a deduction
 “for cartage is made by the Clearing House, but for local
 “traffic it was not shown to us that the allowance the
 “Clearing House make for cartage, as between different
 “Railway Companies, is added to the goods rate, and ought
 “to be regarded as an extra, not chargeable to land, but
 “referable to the trade of a carrier by road ; and we think,
 “that as regards local traffic in Stallingborough, only what
 “the Company expend in carting goods carried at carted
 “rates and a reasonable profit thereon should be taken
 “off the gross rate.”

It is understood from this Judgment (which is not quite
 so clearly expressed as the head-note) that the Com-

missioners held that the cartage terminals ought to be deducted from the foreign traffic receipts, but not from the local traffic receipts, which local traffic receipts do not pass through the Clearing House. On the authority of this decision, it is contended that the "cartage and parcels terminals" can only be deducted from the receipts for foreign traffic, and that the receipts for "cartage and parcels terminals" for local traffic, must be included in the traffic receipts of the railways; but this is manifestly inconsistent, as the "cartage and parcels terminals," whether for foreign traffic or local traffic, are both earned off the Companies' lands, and if the "cartage and parcels terminals" are deducted off the foreign traffic receipts, they ought also to be deducted off the local traffic receipts.

THE WORKING EXPENSES AND TENANTS' CAPITAL CONNECTED WITH CARTAGE AND PARCELS TERMINALS.

Assuming the receipts for collection and delivery of goods and parcels to be deducted from the railway traffic receipts, all the working expenses connected with the collection and delivery of goods and parcels must be deducted from the railway working expenses, and the value of the working stock used for collecting and delivering goods and parcels, must be excluded from the value of the Railway Companies' working stock, and the rateable values of the stables, cart, lurry, and van sheds, and other buildings connected with the collection and delivery of goods and parcels, must not be deducted from the rateable values of the railways as part of the Railway Companies' property separately rated.

The questions I have raised in reference to the “cartage terminals” have been submitted for the opinion of Counsel and received the fullest confirmation.

The following sketch of a valuation of a railway, and the mode of apportionment I suggested in my Paper,—that the rateable values of railways should be apportioned on a per-centage of the traffic receipts earned in each parish,—will probably remove an impression, that the result of the principle suggested is an equal mileage rate over the whole line without reference to the traffic:—

Traffic receipts	£2,000,000
Working expenses, exclusive of Parliamentary expenses, and rates and taxes, 52 per cent.	<u>1,040,000</u>
<i>Balance</i> , to be divided between landlord and tenant	£960,000
<i>Tenant's capital—</i>	
Working stock	<u>£2,000,000</u>
Stores	<u>£200,000</u>
<i>Tenant's Allowances—</i>	
5 per cent. interest on working stock	£100,000
10 per cent. profit on working stock	200,000
10 per cent. profit on stores	20,000
	<u>320,000</u>
<i>Rateable Value, plus stations and Rates and Taxes</i>	<u>£640,000</u>
Carried forward	£640,000

Brought forward . . .	£640,000
Value of stations separately rated	£80,000
Rates and Taxes on stations, at 4s. in the pound . . .	16,000
	96,000
<i>Rateable Value of railway per se, plus Rates and Taxes</i>	 <u>£544,000</u>

It is assumed in this sketch that the working stock and ways and works are maintained and renewed, and the costs "all charged to revenue."

The rateable value of the railway, *plus* rates and taxes, is equal to about 27 per cent. of the traffic receipts, which, if apportioned according to the traffic receipts in each parish, would give the following rateable values :—

Where the traffic is equal to £1,000 per mile per annum, a rateable value of £270 per mile ;

Where the traffic is equal to £5,000 per mile per annum, a rateable value of £1,350 per mile ; and,

Where the traffic is equal to £10,000 per mile per annum, a rateable value of £2,700 per mile.

From these rateable values the rates and taxes would have to be deducted according to the rates in the pound levied in the different parishes. Probably, in the rural parishes, the rates would average about 1s. 6d. in the pound, and in the urban parishes 4s. in the pound, and the amounts on which the rates would be assessed would be reduced accordingly.

Thè CHAIRMAN said that as many of the gentlemen who were specially competent to discuss the Paper just

read were engaged at Quarter Sessions, it had been thought best to postpone the discussion on this and the previous Paper by Mr. HEDLEY, until the next Meeting. If, however, there were present any who desired to make any remarks, and who could not attend on the next occasion, the Meeting would, he was sure, be happy to hear them.

Although he had himself moved the adjournment of the discussion at the last Meeting, he would prefer to reserve the remarks he had to make until the general discussion on the 20th inst., when he trusted that the author of the Paper would be present.

The motion for postponing the discussion, having been put to the Meeting, was carried unanimously.

AT
THE ORDINARY GENERAL MEETING,

Held on Monday, January 20th, 1879.

THE PRESIDENT IN THE CHAIR.

The discussion on Mr. HEDLEY's Papers on "The Rating of Railways" and on "Terminal Charges" was resumed.

The PRESIDENT said he regretted to state that Mr. RYDE, who moved the adjournment of the discussion at the last Meeting, was unfortunately unable to be present, and he would therefore call on Mr. H. J. CASTLE, Sen., to resume the discussion.

Mr. H. J. CASTLE, Sen. (Member), said that his attention, for many years past, had been turned almost entirely to the valuation of railways, gasworks, and waterworks, and he ventured to think, therefore, that he could speak with some experience with reference to the considerations raised by his friend, Mr. HEDLEY, in the Papers before the Meeting.

He concurred with Mr. HEDLEY, to a very great extent, as regarded his premisses, but he did not agree with his conclusions or inferences, or approve his plan for remedying the evils of which he complained. He quite agreed that the tribunals before which such matters were brought, might be amended, but not in the way suggested by Mr. HEDLEY. The present tribunals were not all that could be desired, but they might be worse, and any attempt to reform them should be very carefully considered, and with due regard to all the interests involved. The Courts of Quarter Sessions were, as a rule, composed of men of good general intelligence, but not necessarily conversant with each particular subject upon which they were called upon to decide. Few even

of the judges of the land were specially conversant with any large proportion of the various subjects brought before them. They were guided simply by their general sense of the merits of the case, after weighing carefully the technical evidence adduced by each party.

He believed that the Courts of Quarter Sessions were, in the same manner and by the exercise of ordinary common sense, fully capable of deciding most of the cases brought before them. Speaking for himself, he most decidedly objected to any scheme which would place this immense power, and the enormous interests involved, in the hands of one or two men, and he believed that the adoption of any such proposal would be a most serious matter, not only to the railways and other public Companies, but to the unions and other bodies whose interests were not supposed to be identical with those of the Companies. Taking one case with another, he was persuaded that substantial justice was done, in the great majority of cases, by the present courts of justice or of reference. It should be borne in mind that the Courts of Quarter Sessions had the power, which they very frequently exercised if they felt the subject matter was such as to require it, of suggesting that cases should be referred to men whose daily vocation it was to settle complicated questions of the kind. It, consequently, very rarely happened that a complicated question of rating came before the Quarter Sessions for actual decision, and, on the whole, he thought that justice was very fairly administered by the existing tribunals.

The valuation of railways was a subject far too comprehensive to be treated within the limits of a speech, and it was one of so difficult a nature that not even the principles of valuation had yet been settled. To be sure, certain principles had been laid down, but they had been found by Sur-

veyors to be, in many instances, perfectly inapplicable, and the facts to which they were to be applied, themselves varied almost infinitely. He might briefly refer to that first child of his, "Contributive Value," which he was very glad to find was strangled in its birth; yet there was, no doubt, such a thing, abstractedly, as contributive value, but the difficulty was to measure it in practice.

The Court of Queen's Bench, among others, had held at one time that there was contributive value, and at another time that there was no such thing. He was in the famous Haughley case, and had endeavoured to apply the contributive value principle, which had been laid down in the Cannock Chase case—that there was over and above the value existing in the property in the particular parish, a value due to it for the profit derived from it elsewhere. The Court, however, would not entertain it, and there was an end of it; but if the Companies had only known their own interests they would have supported the principle, for the investigations required in connection with it were so complicated and difficult that it was perfectly impossible for any Surveyor whatever to arrive at a result in any particular parish without the aid of the Company, and without access to their accounts, and the assistance of their employés in working out the figures. As he had said, contributive value existed as a fact, but it could not be measured. Take an example: In one parish there was more grass land than was wanted, and not sufficient arable land, and in an adjoining one enough arable land but not enough grass land to make a desirable farm. The union of the two gave all that was wanted. If the farm happened to lie in one parish, the question of contributive value would not arise; but suppose it happened to be in two parishes. One parish claimed that, "in addition to the intrinsic value of its own

portion of the farm, it was entitled to something for benefitting the other portion of the farm beyond its boundaries." The other parish, however, advanced a similar claim, and herein lay the difficulty, which applied equally to a Railway Company. If portion A of a railway contributed to B, and B contributed to A, the difficulty was to measure how much more A contributed to B than B did to A; and this difficulty was so great that, unaided by the figures of the Company, it would be absolutely impossible to work out the problem.

It must not be imagined, from the apparent facility with which Mr. HEDLEY had worked out a scheme for valuing railways, that it was so simple a matter as it appeared to be on paper. He did not know anything so difficult or that required so much consideration, for every item cut two ways. He hoped, at the next Meeting, to lay before the Institution a Paper on "Contributive value," when the subject could be gone into more fully.

Mr. HEDLEY's second Paper dealt with what were called "terminal charges," which were charges made for services rendered within the station and out of the station, and he was anxious to draw a clear distinction between the two. A terminal charge would, as a rule, represent work done and profit made upon that work. A charge for station terminals was a charge to reimburse the Company the wages of their porters and workmen. Those services were rendered within the station, and the Courts had ruled that, in arriving at the value of the mileage receipts of a railway over and above what might be called the transit charges or the passenger charges, you were to throw those inside terminal charges in, and having so done deal with the station as only indirectly contributing towards earning those terminal charges. He did not approve of this decision; for

whenever a profit was made, if that profit were at all rateable, he held that it should be given to the parish where the profit was made, and this rateable value was what a man might be willing to pay as rent for the right of discharging all these terminal duties. Such a man would have nothing to do with the profit made or the loss incurred in conveying passengers or goods over the line. Had this principle been acted on, the Amwell case would never have been brought before the Court of Queen's Bench, and a distinction would have been made then between transit services and terminal services.

The Courts, however, had ruled otherwise, and there was nothing to do but submit. As Mr. HEDLEY had said, there were three kinds of (goods) traffic—local, foreign, and through. *Local*—(speaking of any line of railway) beginning and ending upon the line; *foreign*—either beginning or ending upon the line, but not both; *through*—neither beginning nor ending upon the line, but passing over. Now take the case of goods sent from A Railway (over B) to C. If called upon to value B, according to the decision of the Court of Queen's Bench as regarded the *local* traffic, the transit charges from one station to the other must be spread over the distance run, and the terminal charges made at each station—not the outside but the inside charges—must be thrown over it. In dealing with the *foreign* charges, whatever terminal charge the Clearing-house did not give him must be knocked off and then divided, and in dealing with the *through* traffic the terminal charges must be deducted, or the Clearing-house did it for him, and then gave him only the transit charges. Now, what was the valuer to do? He got from the Company the mileage receipts, which included all three—local, foreign, and through. One, *the local*, having the two terminal charges spread

over the whole distance run; and another, *the foreign*, having only one terminal spread over; and the third, *through*, having none. This did not seem to him to be supplying him with the mileage receipts according to the intention of the Courts; but he did not believe that the Courts really understood the matter themselves, or it might be that the very case on which they came to the decision was not clearly stated to them. The judges, of course, could only deal with cases according to the way in which they were brought before them.

He believed there was no question so difficult, and which admitted of such diversity of opinion, as the valuation of railways. It was to him clear that even the Railway Commissioners in the decisions they had come to did not always thoroughly understand the case. Their decisions had been perfectly fair and above suspicion; but he could not help thinking that they had not in some cases been very happy in applying the principles they had themselves laid down.

It was stated by Mr. HEDLEY, on page 114 of his Paper, that "the rateable value of railways should be apportioned on a percentage of the traffic receipts earned in each parish," and that "this statement will probably remove an impression that the result of the principle suggested is an equal mileage rate over the whole line without reference to the traffic." Well, if that sketch of a valuation of the whole of a railway was merely put in, as alleged, for the purpose of removing an impression, it would answer its object effectually; but if it was put in with the idea of suggesting a mode of dealing with the subject generally, he must say that he did not agree with Mr. HEDLEY at all.

Mr. HEDLEY explained that all the items on page 114 were hypothetical.

Mr. CASTLE (resuming) supposed they were; but there was scarcely any item there which, had they to deal with it in practice, any two Surveyors would agree upon. It seemed a very simple matter to sketch out a valuation in this way, assuming certain figures for the gross receipts and certain figures for the working expenses, and so on, and to state that "the rateable value of the railway, *plus* rates and taxes, is equal to about 27 per cent. of the traffic receipts;" but the general adoption of any such principle would tend to work injustice to one party or the other. He remembered that Mr. CHARLES PENFOLD, who was at one time an authority on railway rating, had suggested something of the same kind, and the matter was taken into consideration, but it was found impossible to work out an average which would fairly apply to the different percentages of working expenses as compared with the receipts.

Mr. P. D. TUCKETT (Member) had not come prepared to speak at any length upon the main subject of the Paper, and what few remarks he had to offer he had intended to make at a later period of the discussion.

The main purpose of the Paper was, he presumed, to point out certain imperfections in the existing law and principle of rating, and to suggest a new tribunal for the settlement of cases of this kind.

As regarded the scheme set forth in page 114 for the rating of railways, it must be obvious that it would have the effect of increasing the rating of unremunerative portions of railways and of depressing the rating of the best parts. Whether such an alteration was called for he very much doubted. But passing by these considerations, and being prepared, so far as he was concerned, to carry out whatever the law might, from time to time, be found to be, he wanted

to say a word or two about "contributive value." All had been, he thought, exceedingly glad to believe that the Haughley Case had settled once for all the troublesome theory of contributive value; but now, he believed chiefly through the personal efforts and influence of his friend Mr. HEDLEY, it appeared that the question had been re-opened in two or three new cases.

He hoped that Mr. HEDLEY, in his reply, would cite a case or cases in which he had been concerned in valuing some of the best portions of a main line of railway, where he had deducted from their profits something to make up for the expense they were put to in working unremunerative branches. This was the other side of the contributive value notion; for it seemed to him that what Mr. HEDLEY and others, who were so prominent in acting for Boards of Guardians against Railway Companies, would bring about would be the very unfair result, that those branch railways would practically be rated twice over. If a contributive value were applied to the case of a branch railway, or if the leasing Company were assessed at the rent which they chose to give for a line which was, *per se*, unremunerative, but which they took simply in order to improve the traffic on their own line, it followed that some part of the receipts of that main line earned on that main line would be absorbed in the payment of that rent; and, therefore, in the valuation of the main line, there would have to be an allowance for the loss on any branch line necessary to maintain their traffic, involving calculations, as Mr. CASTLE had said, of a complicated and, perhaps, impossible character. It was, he thought, very much to be regretted, seeing that the law on the point seemed to have arrived at a tolerably simple and intelligible state, that it should be again complicated by the introduction of a principle which it would be impossible fully and fairly to carry out.

At pages 92 and 114, Mr. HEDLEY had given two illustrations of the method of rating railways, stating that one of them was an example based upon a case which had come before a court, and the other a mere specimen valuation. These illustrative valuations would go forth in the "Transactions" to the profession, and the figures might carry a certain amount of weight with them, and be looked upon as accepted figures; but it ought to be pointed out that those deductions were such as were adopted by those who took a thoroughly parochial view of these matters.

Now, it always seemed to him that the law of rating, viz., what a hereditament may reasonably be expected to let for, carried out as it must be, pressed rather hardly, at the best of times, on public companies. If a Surveyor were called upon to decide what a mansion or a farm in the occupation of an owner, or a manufactory in the occupation of an owner, would reasonably be expected to let for, he had to make his valuation without the aid of the owner's accounts, and, as the judgment of the Surveyor was not infallible, he had always to make some little allowance, or he would constantly be in hot water. On the other hand, railways, and all public companies who published their accounts, would come before the tribunal at a disadvantage, as compared with owners of the kind he had referred to; and he did not sympathize with those who were always for reducing to the lowest a deduction to which a Railway Company's published accounts showed they were entitled.

At page 92, Mr. HEDLEY put the allowance for tenants' profits at 10 per cent., but he had not noticed in the Paper any deduction for interest. At page 114, he took the tenants' profit at 10 per cent. and interest at 5 per cent. He thought it should be noticed by some one in this dis-

cussion that those were the lowest figures ever put forward on behalf of Guardians of Unions. It had always been usual for Railway Companies to claim more, and he thought it had been usual for Courts of Quarter Sessions to allow $2\frac{1}{2}$ per cent. more, and, in some cases, 5 per cent. more.

It was always contended by gentlemen who took the parochial view that Railway Companies professed in their accounts to maintain rolling stock and permanent way out of their revenue, and, therefore, a very small allowance was sufficient for all contingencies; but it was very unfair to be too hard on Railway Companies with regard to published accounts put forward for a totally different purpose; and if the directors and officers of a Company had not made a sufficient allowance for maintenance, that was no reason for mulcting the shareholders, who were innocent parties, by an unjust assessment.

There was no doubt that portions of the working or rolling stock of Railway Companies became eventually out of date, and that stations are superseded by new ones, and even portions of lines of railway, here and there, and these things were not met by the ordinary annual charges for maintenance. He happened to be the auditor of a Railway Company for many years, and spoke with some knowledge of these matters.

Now, Mr. HEDLEY, in his estimate at page 115, said, "It is assumed in this sketch that the working stock and way and works are maintained and renewed and the costs 'all charged to revenue.'" Acting on that assumption, he had made no deduction for the renewal of way, which was always claimed by Railway Companies and allowed.

It should, therefore, he (Mr. TUCKETT) thought, be put upon record, in connection with Mr. HEDLEY's illustration, that the deductions were very small under the two heads

of tenants' profit and renewal of way. He believed that, as the law stood, railway and other public companies were very fully rated, as compared with other owners, and he thought it a great pity if figures so favourable to the parishes went forth as accepted by the Members of the Institution.

MR. T. SMITH-WOOLLEY (Vice-President) thought that some alteration of the present law of rating railways was required, if it were the fact that the principle of "contributive value" was to prevail hereafter. It was clear that, unless some deduction were made from the rating of the more lucrative parts of the line corresponding with the additions made in the case of those which did not pay, for contributive value, the total assessment must be larger than it ought to be.

Although he did not profess to be able himself to determine all questions of rating, he thought it might be fairly assumed that if any given railway could be dealt with as a whole there would ultimately be a general consensus of opinion, amongst experts in that particular branch of the profession, as to the principle on which the law of rating applied to it; but, at present, there were no means of applying it—there was no tribunal to which a Company could appeal if their total assessment, *i.e.*, the aggregate of their assessments for each parish or rating area, were larger than their total assessment ought to be; and it was clear that, except by means of a special statute, no such provision could be made.

He thought it very clear, if one set out on the principle that no railway ought to pay on the whole more than its fair rating value as a whole (which seemed a truism, but which was really the point in question), that there should be

some tribunal constituted for assessing it as a whole, either on the principle of the Scotch Act or by giving some additional power to the Railway Commissioners.

Having ascertained the proper assessment for the whole, there came, of course, the question of apportionment; and difficult problem though it was, he thought something might be elicited from the discussion tending towards its solution. His experience of Quarter Sessions as Courts of Appeal against rates did not dispose him in favour of an increase of their power in that direction, but it seemed to him that one of the suggestions in Mr. HEDLEY's first Paper—he, unfortunately, had not read Mr. HEDLEY's second Paper until a few hours ago—was really practical, and might be made to work, *i.e.*, the principle of ascertaining (a) the rateable value of the entire railway, distinct from stations and other buildings, and (b) the aggregate length of all its individual single lines, whether intended for direct traffic or for sidings. The quota of assessment in each rating area would, in this case, be the proportion of the total assessment due to the length of single traffic lines, or sidings, within each area, to which should be added the separate rateable value of the stations and other buildings within such rating area. He had sketched out an illustration of the principle suggested, as he understood it. A Railway Company owning lines of the aggregate territorial length of 500 miles, with a London terminus, would probably have on its entire system 1,500 miles of single lines or pairs of metals for direct traffic, and 400 miles of sidings; = total, 1,900 miles of single line.

Assuming the total assessment of the entire railway, exclusive of stations and other buildings, to be determined at £570,000, this would represent an average of £1,140 per territorial mile, or £300 per mile of single line.

This, of course, was pure guesswork—not dealing at all with the question of the proper principle of rating railways,—merely illustrating a mode of apportionment. The feeble little one-line branch would be assessed to a rating area in which it had no stations or sidings, at £300 per territorial mile, and the stronger branch line with the parts of the main line most distant from London, with two sets of metals, at £600 per territorial mile, enhanced in the case of stations and junctions by the proportion due to the aggregate length of the sidings.

In the neighbourhood of the large central station, and from thence to the London terminus, the four lines of traffic metals and the numerous sidings at stations, junctions, and goods and coal depôts, would probably give eight miles of single line or £2,400 of assessment per territorial mile, exclusive, as before, of stations and other buildings.

That was a very rough statement of a principle which, as it appeared to him, might be made to work. It was only empirical, and must be taken for what it was worth, but it would be self-acting—a great advantage to the public, if not to the profession.

In the scheme set out in Mr. HEDLEY's second Paper, it appeared to him that the principle of apportionment by a percentage on the traffic receipts in each Parish, would land them in the same difficulty that they had at present, viz., of ascertaining what the traffic receipts were. At any rate, questions were sure to arise as to the receipts, which would deprive that system of apportionment of the recommendations of being simple and self-acting.

Mr. E. J. SMITH (Past-President) thought that the discussion had got almost too much into detail, and that they ought mainly to have regard to the principles disclosed

in Mr. HEDLEY's Paper. He understood that Mr. HEDLEY objects that there is great uncertainty under the present system, and throws out suggestions that the Scotch system should be partially imitated. Mr. HEDLEY stated that the Scotch system is to have a paid assessor, who determines the aggregate value of each railway, and that then such aggregate value is divided simply according to the distance the railway passes through each particular parish. The latter provision was evidently an inequitable mode of dividing, but he certainly thought it might be desirable to have a similar system so far as an aggregate value went. Suppose that instead of having an assessor the present system of parochial valuations continued, but that all matters referred to Quarter Sessions might be carried up to one particular board or tribunal, the Railway Commissioners or Board of Trade. You would soon have a tolerable certainty to guide future doubts. At present one great difficulty is that each case is carried to a Court and may be heard by a judge holding views and deciding contrary to previous decisions. The provision of one board or tribunal of appeal appeared to him to be one step in the direction of bringing order out of conflicting decisions.

Mr. W. EVE (Member) was much disappointed that the Railway Company's side of the question was not more fully represented in the discussion. Though, in common with other Members, he felt much indebted to Mr. HEDLEY for his admirable Paper, he could not agree with him as to the mode he proposed for remedying the present evils, believing that its adoption would intensify rather than lessen these evils.

He had hoped, as other speakers had hoped, that the terrible bugbear, "contributive value," was dead, for he

looked upon it as utterly impracticable, and was glad to hear his friend, Mr. CASTLE, characterize it in somewhat similar language.

He concurred with the statements of Mr. HEDLEY, at pages 82 and 83. The first of these statements (page 82) was as follows:—"In addition to these allowances for " interest and tenants' profits, the Railway Commissioners " allowed the London and North Western Railway Com- " pany 2 per cent. on the present improved value of their " working stock *for depreciation*, although it was admitted " that the working stock had been *improved and increased* " in value, and *the costs of the improvements* had all been " charged to revenue."

Now, he thought that allowance a most unfair one. If the reports of a Railway Company and the certificates of its officers stated that both the rolling stock and the permanent way had been kept up in good order out of revenue, it should be assumed to be the case, and no further allowance should be made.

The other statement of Mr. HEDLEY's, to which he wished to refer, would be found on page 83, viz.:—"I " submit that the deductions or allowances made from the " profits of Railway Companies of 5 per cent. for interest and " 10 per cent. for tenants' profits on the value of the working " stock, and 10 per cent. for profit and waste on the value of " the stores, to arrive at the rateable value of the railways, " is most liberal to the Railway Companies," and he then went on to make some observations with regard to the results, if agricultural land were dealt with in the same way. He (Mr. EVE) thought there was no doubt that Railway Companies were allowed a larger amount of profit on their capital than any other subject of rating. As regarded agricultural land, he (Mr. EVE) ventured to think, especially at

the present time, that 10 per cent. on tenants' capital was too great an allowance. The agricultural tenant was not getting anything like it, but that was the maximum amount he was supposed to get. Now to apply this rule. Suppose a 300 acre farm at—say, 30s. an acre. The rent would amount to £450. Tenant's capital, at £10 an acre, would be £3,000. The maximum interest which the tenant farmer got on his capital might be taken at 10 per cent., which would be £300 a year. But dealing with the farm on the principle applied to the case of Railway Companies, what would be the result? In the first place, there would be 5 per cent. on the capital, £150; 10 per cent. tenant's profits, £300; which, with another £100 a year allowance for the farmer's personal services, would make a total of £550. Assuming the tenant's profit to be only £300, £250 had to come off, and instead of £450 it would be £200 a year, and, consequently, the farm would be reduced from 30s. an acre to 13s. 4d. Many farms, which were let at £1 an acre, would be reduced on the same principle to 3s. 4d. per acre. He considered the allowance of 15 per cent. too liberal.

With regard to the points to which Mr. SMITH had just referred, he did not think there was so much difference in the decisions of the higher Courts as in the decisions of Quarter Sessions. The most difficult points which they, as Surveyors, had to contend with never reached the Superior Courts. For example: The deduction for the renewal of the line beyond the actual expenditure was a point wholly within the jurisdiction of Quarter Sessions, the Superior Courts only saying "Is it requisite to the maintenance of the hereditament?" If so, it must be deducted; if not, it must not be deducted. This was a point which was decided by Quarter Sessions in the way they thought proper.

The question of the percentage also never came before the Superior Courts, and was wholly settled by Quarter Sessions; therefore Mr. SMITH's suggestion, unless the law were altered, would not meet the case.

He was not altogether prepared to agree with Mr. TUCKERT's statement that Railway Companies were put in an unfavourable position, as compared with manufacturers, by the publication of their accounts. Railway Companies could keep back a great deal of necessary information, and, if they chose, could be very awkward in these matters. But manufacturers would not be approached on the same ground. It was no question in valuation as to what a man made in his manufactory—that was not the point, because he might get land elsewhere for his operations; but a Railway Company could not do so. If a Railway Company wanted to carry passengers from Liverpool to London, they must go along the existing line; but a manufacturer of any particular article had many places on which his works could be erected, and, therefore, there was the value of the land to be considered, and the value of the structure, so that a Railway Company stood at no disadvantage in that respect.

Mr. WOOLLEY had referred to the probability that Railway Companies were over-rated; but he (Mr. EVE) was inclined to think that, if a tribunal were needed to redress inequalities of railway assessments, it would be principally occupied with cases of under-assessment of such Companies. Nothing, he conceived, would be more interesting than a list of the ratings of any of the large Companies added up, to see how they would compare with the real rateable value, on the broad basis put forward by Mr. HEDLEY in his Paper, and he thought such a statement would astound a good many people. He knew Railway Companies which were rated at not one quarter of the

proper amount, and did not think there was any fear at present of their suffering any substantial injustice.

One thing had, he thought, been lost sight of, which was that the rateable values of Railways were not fixed for ever, but were adjustable every year in the country, though not in London. Therefore, although the occupation for the purpose of valuation was assumed to be a continuing one, it was in reality nothing more than a yearly value. Companies generally made a large claim for risks, but by looking back through the accounts of a Company for several previous years, it was possible to arrive very fairly at the average risks to that Railway for the coming year. That was the way a man would go to work who wished to ascertain the rent he would give for the line.

Mr. HUGH SHIELD (Associate) feared he had no right to address the Meeting, inasmuch as he had not specially prepared himself to do so. Travelling unexpectedly to London to-day, he had the good fortune to meet Mr. WOOLLEY in the train, with copies of Mr. HEDLEY's Paper; so he had carefully read them, but he was by no means in a position to draft offhand, on the lines indicated by Mr. HEDLEY, a Bill for the Amendment of the Law of Railway Rating. Nevertheless, he was in a position to make a few observations, which should be conceived in the spirit of Mr. E. J. SMITH's remarks, and addressed to principle, and not to detail. And first he wished to say that Mr. HEDLEY had produced a very good Paper indeed. One did not know how good it was till one had read it carefully more than once. Among its merits was its clear and definite meaning. He was regarding it exclusively in its aspect as a proposed amendment of the law.

In that aspect he thought it did not mean what his

learned friends Mr. CASTLE and Mr. RYDE conceived it to mean, judging from the report of their observations at the time the Paper was read. He thought Mr. HEDLEY had not exposed himself to the *reductio ad absurdum* which Mr. RYDE applied to him in his illustration of the farm with good arable land in one parish and barren heath in another parish, and to which Mr. CASTLE argued (on page 99), "Would it not be unfair to the London parish to give it only the rateable value of £75 for the three-quarters of a mile of line within it?" He answered, Very unfair; but Mr. HEDLEY's scheme did not lead to that unfair result. It was not possible, upon either of the alternative principles of apportionment stated by Mr. HEDLEY on page 98, to arrive at £75 in the case put by Mr. CASTLE. Whether either of those principles of apportionment was feasible or free from objection he was not prepared to say, for he had not thought the matter out, and he did not know what difficulties of detail would be encountered in applying it.

He did not profess to be an absolute apologist of Mr. HEDLEY's scheme. To form a judgment upon it he must first see it embodied in a Bill. But he thought the well founded objections to it would be objections rather of detail than of principle. The principle of rating the whole undertaking, and apportioning that among the several parishes, was the right principle. He thought it was not (as Mr. RYDE said, page 101) applying one law of rating to railways, and another to all other hereditaments. The method was different, but the object aimed at was the same as that aimed at by the existing law, viz., the ascertainment of the rateable value or net earning power of the rateable subject within the area of rating. But in Mr. HEDLEY's scheme the solution of the problem was attempted by a

sounder method than the method of resorting to the fiction of the hypothetical tenant. He held it one of the chief advantages of Mr. HEDLEY's scheme, that it would enable them to say good-bye to the hypothetical tenant. For Mr. RYDE and Mr. CASTLE (Senior) the hypothetical tenant had no terrors. They were familiar with him. They clung to him as the old pleaders clung to JOHN DOE and RICHARD ROE. They could deal with him in all sorts of relations, and could say what rent he would pay, either for a house or a farm which a man would take, or for such a rateable subject as the portion of Great Western Railway property within the Parish of Paddington, which no man could possibly take and pay rent for. The hypothetical tenant was a respectable person when he first came into existence—when men were not puzzling themselves with so difficult a problem as the rating of a portion of a railway. In relation to such a subject the hypothetical tenant was a mischievous fiction.

Another advantage of Mr. HEDLEY's scheme was this. At present, a railway was rated in fragments. There were as many separate assessments as the railway touched parishes. There was no uniformity in the several assessments. There was no security that the sum of the several assessments should equal the rateable value of the whole undertaking. Sometimes that sum fell far short of, sometimes it greatly exceeded, the value of the whole. That anomaly Mr. HEDLEY's scheme would abolish. Assuming that the difficulties of its application could be overcome, Mr. HEDLEY's scheme would apply a scientific method to a subject which was now encompassed with fiction.

On the suggestion of the PRESIDENT, the discussion was then adjourned until the next Meeting.

AT
THE ORDINARY GENERAL MEETING,

Held on Monday, February 3rd, 1879.

THE PRESIDENT IN THE CHAIR.

The discussion on Mr. HEDLEY's Papers on "The Rating of Railways," and on "Terminal Charges," was resumed by

Mr. E. RYDE (Vice-President), who said that he had on several former occasions read Papers and taken part in discussions on the subject of Railway Rating in this Institution, and he desired to say, by way of preface, that nothing had since occurred to induce him to alter in any one respect the opinions which he had always entertained and expressed. Judging from Mr. HEDLEY's Papers, and from the reports of the last discussion, the question of the particular tribunal by which these matters were to be decided was not so much under discussion, and the Magistrates at Quarter Sessions seemed to have had an easy time of it on the present occasion.

It was quite true that a new executive officer was proposed, but he did not know whether he quite understood that the author wished the old tribunal abandoned in respect of appeals, or whether he proposed that there should be any appeal against the work of the special officer whose appointment had been suggested.

The text with which Mr. HEDLEY opened his Paper might be a good one; but, before it was sought to disseminate information for the public good, it would be as well, perhaps, to test the soundness of that information by a

careful examination of the facts upon which it was based. This he proposed to do this evening, and must ask for the indulgence of the Meeting if compelled to go into some detail in doing so. He would range his observations under six heads; for, in order to discuss the subject intelligibly, it was necessary to marshal its component parts in some kind of order and logical sequence.

First, what is the law under which railways were rated?

Secondly, in what respect is that law bad or defective?

Thirdly, what are the amendments in the law proposed by the author of the Paper?

Fourthly, how is the value of a railway ascertained?

Fifthly, in what respect did the author hold that there is any inefficiency or inconvenience in the present mode of ascertaining the value? and,

Lastly, what is the remedy proposed?

It would be impossible within reasonable limits to discuss exhaustively the whole of these questions, and he would therefore deal with them as concisely as possible.

Now, what is the law under which railways are rated? The author of the Paper gave a definition of it, at the bottom of page 80, which he need not quote. But the law of rating railways was nothing more or less than the law of rating any other property. The property of a Railway Company was to be rated in any particular parish at the rent it might reasonably be expected to let at. The gross estimated rental was the rent which a yearly tenant would pay for it; the rateable value was the rent which might be reasonably expected to go, net, into the landlord's pocket every year. That was the law, and there was no difference in the applicability of that law, to railways or any other property—gas or water works most nearly resembled railways as subjects of rating. The same prin-

ciple applied to a farm, and the gross estimated rental was the rent which a yearly tenant might be reasonably expected to pay for it. In making a scientific valuation of a farm, it was necessary to estimate what produce a tenant would get out of it; and it was neither more nor less than this which had to be done in valuing a railway?

Now, Mr. SHIELD had jocosely observed on the last occasion that the hypothetical tenant was a bugbear, and the observation marked the difference between the educated lawyer's mind and the educated Surveyor's mind. It mattered nothing whether the hypothesis assumes a tenant, or a purchaser, or a vendor. The man who was called upon to value a piece of land, or a house, or anything else, must have an hypothesis:—He must estimate what the property is likely to let at; and the hypothetical tenant is nothing more nor less than a convenient fiction, to meet the case where there is no tenant but a purchaser. The law, as it stood, simply enacted that a railway should be rated in each parish at such a sum as should be equal to the rent which a tenant might reasonably be expected to pay.

Now, in what respect was the law bad or defective? At the bottom of page 75, the author stated that an amendment of the law was necessary, because the chairmen of railway companies, at their annual meetings, complained (not, be it observed, of the law, but) of the amount of rates they had to pay. To complain of being over-rated was one thing; to complain that the law was bad was another thing altogether; and though he had heard many chairmen complain on a vast number of occasions, he had never understood that it was the law they found fault with. The author then went on to say that the frequent appeals to Quarter Sessions against the assessment of railways showed that the law was bad; but again, he did not agree with Mr. HEDLEY. One Surveyor might arrive at the conclusion that railways ought to

be rated at one sum, and another Surveyor at a very different sum, and an appeal to Quarter Sessions was the result. But it did not follow that the law was bad or wanted amending; and so far as those two points were concerned, he was there to contend that there was no evidence of the inadequacy of the law; and he was prepared to go further and say that, so far as he could judge, the present law was perfectly sufficient for the purpose, and was all that was necessary to secure the fairest possible rating. He must not be understood to say that he regarded the present tribunals for appeals as satisfactory (this was a point which had been discussed before, and his opinion on that subject was on record in the "Transactions"); but the law itself was, he believed, perfectly sufficient.

Two or three pages of the Paper were chiefly devoted to the statutory requirements, whereby railways were called upon once a year to prepare abstracts of their accounts, showing their receipts and expenditure, and, if required to do so, to deposit these abstracts with the clerks of the peace and overseers of the various parishes through which the railways passed. The author of the Paper was of opinion that inconvenience had arisen, because the words of the Statute requiring the promoters of the undertaking to prepare these accounts had become inoperative, the original promoters having as a rule disappeared, and the railways having been merged into larger Companies. He (Mr. RYDE) believed that there was nothing in this point of Mr. HEDLEY's. The old Companies and the young ones—and he spoke from personal knowledge of many of the former—prepared a statement of the kind every year, signed by the chairman, and countersigned by the secretary, as required by Act, and any one could see it by paying a shilling for it. This account, however, did not show the earnings of any branch railway, and was not of the slightest use to anybody

making a valuation of a railway in a particular parish. He disputed the inference which Mr. HEDLEY wished drawn, that if the stipulation as to these accounts, which accompanied the powers conceded to the original promoters, had been duly observed, and the earnings and expenses of every branch railway had been kept separate, there would have been greater facilities for rating branch lines and indeed all railways than at present existed. As a matter of fact, it would be perfectly impossible for the accountant of a railway to put his statement into such a form as to be of service to a Surveyor in making the valuation of a railway in any particular parish. As he had said on a previous occasion, a passenger might take a ticket on a branch line, which would entitle him to travel not only over that line, but over three or four lines on the system, constructed under as many different Acts of Parliament, and be landed with that ticket at a station from which he might return not only by another route belonging to the same Company, but by a line belonging to another Company altogether. How was a case of this kind to be dealt with? The fact was that the working of railways has become so complicated, that when it was desired to ascertain the value of any particular line, every circumstance which surrounded it, and which affected the working of that line, must be taken into consideration—its ownership, its utility to the public, and all its other elements of value, just as would be done in valuing a piece of land, where the valuer must bear in mind that it may be fit for one use to-day and for another use to-morrow.

Every case must rest upon its own merits, and no Act of Parliament could furnish Surveyors with more facilities for making valuations than they now possess, and the whole question was one of skill and experience on the part of the valuer. At the bottom of page 93, Mr. HEDLEY referred, as one of the causes from which objections to the present system arise, to

what is called the parochial principle of rating, which means, in his view, that every few chains of a railway in a Parish are to be treated as a separate hereditament, and to be valued as if a separate railway. He could only say that no such principle as the foregoing was recognized, in the south of England at any rate, nor was he aware of any decision which countenanced it. The piece of railway in each parish was not to be valued as a separate railway, and was not to be taken as a separate hereditament, but was to be treated as an essential part of a large hereditament. The West Middlesex Waterworks Case was quoted at some length in Mr. HEDLEY's Paper, but words which seemed to him (Mr. RYDE) to knock down Mr. HEDLEY's argument were omitted from the quotation. Those words were:— "If in the hypothesis some necessary incidents are to be assumed (1) that each part is to continue in joint co-operation; no one tenant of an essential part being able to stop his part; (2) that the title to the required land is permanent, so that there is no risk of being compelled to remove fixed capital." Those words, he thought, dispelled the notion of the separate hereditament, and went against the proposition that the railway was to be treated as a yearly tenancy, commencing on the 1st of January in one year, and ending on the 1st of January the next year. He considered, therefore, that the condemnation in the Paper of the parochial principle could not be supported, at any rate on the grounds specified.

In the second paragraph on page 94, Mr. HEDLEY set out another objection to the present system as arising "from the law giving no power of making all the parishes co-operate in rating the several parts lying in each parish, so as to protect the occupiers of such works or railways from being rated in the different parishes beyond the rateable value of the whole taken together." Again, he differed.

The law gave very considerable power of the kind ; in fact, he had just been concerned in an appeal in which the assessment committees of three unions were the respondents, and he forgot at the moment how many parishes (but thirty-five or thirty-six he believed) the appellants, representing, he ventured to think, a very considerable power to co-operate. But who made the complaint? Was it the Railway Companies that asked to have the law amended, and that the parishes should have greater power of co-operation given them, in order that the Railway Companies should not be rated at a greater sum than their entire property was worth? He never heard the point raised in the interests of Railway Companies ; and, as the parishes already possess all the powers of co-operation they need, he had come to the conclusion that no defect in the law had been proved in this respect.

Mr. HEDLEY's next point was one which he approached with fear and trembling, viz., "The conflicting decisions of the judges and the glorious uncertainty of the law." That the law was uncertain, and that judges did not all think alike was, no doubt, true ; but how were matters to be amended in this respect? Were there to be judges born who would not conflict in their opinions, and could we have a law made which should not be gloriously uncertain? Most things were gloriously uncertain as to their results. The law was no exception to the rule ; and it would surely be unwise to give up something known and tested by experience, and substitute for it something unknown and untried, simply because perfect uniformity could not be secured in the decisions of judges. These were, he believed, the whole of the defects in the law set out in Mr. HEDLEY's Paper, and he submitted that it had not been shown that any alteration in that law was required.

He now came to the amendment proposed in the law, and the suggestions were, he thought, a little mixed up with

the valuation question. On line 11, page 97, Mr. HEDLEY states that "the only practical amendment of the law of rating railways that could, in my opinion, be made in England, is by the appointment of an assessor by the Crown to value all the railways in England and Wales, with similar powers to those conferred upon the assessor in Scotland, or, what perhaps would be more congenial to the English taste for 'local government,' the appointment of assessors might be made by the Courts of Quarter Sessions for the different counties in England and Wales," and so on.

He could only say that it was hardly likely that the salary attached to such an appointment would be sufficiently large to attract a man of exceptional skill or experience; and any one appointed to the office would probably have his work to learn. It was possible that the Institution might like to have a look at such a man before he was appointed, in order that the Members might see how they were likely to get on with him. Some Courts of Quarter Sessions were better than others, but on the whole he would rather take his chance before the old tribunals than before the new one proposed. As he had said, he did not touch the tribunal question, except to repeat what he had said on previous occasions, viz., that a Court composed of one barrister and two Surveyors, as a permanent Court, would make a much better Court of appeal than the Court of Quarter Sessions; and its decisions would be uniform, and likely to give more satisfaction than those of the functionary proposed in Mr. HEDLEY's Paper.

Next, as to the mode of valuing railways, and of ascertaining their rateable value. This question had formed the subject of several Papers he had himself contributed to the "Transactions" and his views had undergone no modification since he read those Papers. The author of the Paper commenced by saying that railways must be rated on the same

principle as other hereditaments—from year to year. This was perfectly correct; but at the bottom of page 81 he said:—"The course usually adopted to arrive at the rents "at which railways might reasonably be expected to let "from year to year is to take the traffic receipts for the "preceding year, and to deduct the working expenses, the "profit representing the amount to be divided between the "hypothetical tenant and the hypothetical landlord."

This was no doubt correct, as far as it went; but something more than this was done by Surveyors who wished to do the work thoroughly. For instance, no one ever took the earnings of a railway for the past year, unless there was a reasonable probability of the earnings being the same in the year to come. Anything which occurred, or was likely to occur, to alter the value of a railway, must, of course, be taken into account, and the sum must be estimated which was likely to come into the pocket of the hypothetical tenant in the way of receipts—in other words, what the railway would earn. Next, the expenses which would be incurred in the earning of that sum, and which, deducted from the receipts, would leave the sum which was the net receipts due to line and stations. The next thing was to separate the proportion of the net receipt earned by the stations indirectly, as distinguished from the line proper, because the money paid by the passenger on a railway was paid in respect of the use of both lines and stations. Something must be put aside out of the net receipts earned by both parts of the undertaking, equivalent to the gross estimated value of the stations in the parishes in which those stations stood, and in which they were going to be assessed.

He noticed that in one part of the Paper, the author said that the simple part of the work was the rating of the stations, and the difficult part, the rating of the railway, an opinion in which he did not coincide. He knew many

cases in which the exact converse obtained. To take a case in point. What was the rateable value of Blackfriars Station, on the London, Chatham, and Dover Railway; or of Norwood Junction Station, on the Brighton Railway—Stations which were built for different purposes than those which experience had shown them to be useful for? Greater mistakes were, he believed, made in valuing stations than in valuing lines; and he had met with many men, naturally quick at figures, who could rate a railway, but had no idea whatever of the way to rate the stations.

There had been much discussion lately as to what was meant by taking off 5 per cent. from the gross receipts to meet the value of the stations. The argument on one side was, that it was to meet the value of the stations belonging to the particular Company being rated. If it meant anything, it must be to meet the rateable value of the stations which were used in the earning of the traffic which were brought into calculation in the valuation. Of course, when 5 per cent. is taken as representing the gross estimated value of the stations, it is assumed that the circumstances of all railways are very much alike; and it is, in reality, a rule of thumb. But you would never persuade assessment committees of unions, or magistrates, or directors of railways to allow Surveyors, every time they made a valuation of a line in a parish, to value the whole of the stations of a railway in order that they might say whether this amount should be $4\frac{1}{2}$ per cent., or 5 per cent., or $5\frac{1}{2}$ per cent. It was taken as a close approximation to the right amount, and would be found to hold good over a general average.

Well, then, having taken off 5 per cent. of the gross receipts from the net receipts in respect of the value of the stations, the remainder represented the net earnings of the railway itself. The next step was to estimate the amount of the tenant's capital, and a variety of opinions might arise

as to the amount which should be set apart under this head, though it was not impossible to estimate very closely what the tenant's capital should be. Then came the allowances to be made to the tenant on that capital, viz., 5 per cent. for interest, which he did not understand was disputed in the Paper, and the usual 10 per cent. for trade profit, which he believed, was also conceded; but there was another element to be taken into consideration. If a large contractor were about to rent a railway, he would not be contented to take it entirely on the basis of the previous year's earnings, but would want a covering figure—a margin—to meet unforeseen contingencies; something, in short, that would insure the 5 per cent. interest and 10 per cent. trade profits.

He had been accustomed to take the figure as covering risks from negligence of the Company's servants in the working of the railway generally, and had always been of opinion that it should be 5 per cent. He admitted, however, that he could not always get as much as 5 per cent. The London Court had determined that allowance lately at $2\frac{1}{2}$ per cent., which was all that would probably be given in future for risks and casualties. These allowances amounted, therefore, to $17\frac{1}{2}$ per cent., which was thought by some to be a very large sum for a tenant to get for carrying on a business of the kind. It was a mistake, however, to suppose that $17\frac{1}{2}$ per cent. went into the tenant's pocket; for 5 per cent. was the interest he would get on his capital anywhere else; and 10 per cent. was a smaller trade profit than was made, on the whole, for a series of years, by commercial undertakings. He spoke from experience on this point, as he had had to ascertain it. The $2\frac{1}{2}$ per cent. for risks and casualties was a very small sum, which ought never to be touched by the hypothetical tenant, but be put by to insure his 5 per cent. and 10 per cent. throughout all time.

He noticed that an attempt was made in the Paper to distinguish between tenant's capital used on one part of the undertaking, and tenant's capital used on another. A great tribunal had taken this view, but he contended that when a tenant put many thousands of pounds into a railway he would look at the thing as a whole. The tenant was, he thought, entitled to the same trade profit on every pound. He could not take any of it away, and, therefore, in his own practice he had never made any distinction of that sort; and it was only since the Railway Commissioners had tried these questions, that the distinction had been made.

Having settled how much the tenant was to have, what remained was the gross estimated rental of the railway, and from that had to be deducted the average annual amount of the repairs, insurance, and other expenses necessary to maintain the hereditament in a state to command the rent. In the result, the rateable value of the railway in its entirety was ascertained. It seems that the view of the author of the Paper was that, having got the rateable value of the whole, the next thing to do was to distribute it among the parishes. He would refer to the author's remarks on page 85:—"It is the apportionment of the rateable value of the railways *per se*, more particularly in rating the branch lines, which creates all the difficulties and gives rise to many of the complaints against the principles of rating railways." Now that was not the way in which he (Mr. RYDE) rated a railway. He did not rate a railway in its entirety, and then distribute the rent among the parishes.

He would begin the valuation of a portion in any parish with a knowledge of how he should do it if he were going to rate the railway in its entirety, and he should rate each particular piece in the particular parish precisely in the same way. He had in his hand some figures, with which he would not then trouble the Meeting, as they would be

printed in the "Transactions." They showed four actual valuations which had stood the result of appeals, and which had been confirmed. No names were given, but anyone who was in the cases would recognize the figures at once. One of these was a specimen of a parish valuation, in which he showed how he dealt with each parish. These valuations would not only serve to show his method of making them, but also what would be the effect of the change proposed by the author of the Paper. What he did in valuing the portion of a line in a parish was to ascertain the earnings of the line in that parish. It was as simple as possible to do this with the facts before one. As he said a month ago, if a man travelled 100 miles and paid 100 shillings, every mile over which he went was said to earn a shilling; and if 100 people travelled over one mile 100 shillings were earned on that mile; but if five travelled, only five shillings would be earned on that mile. These earnings were known as the parochial earnings of a railway. Then there must be charged against these earnings in the parish the expenses incurred in respect of them. Now, there was very little difference in mere locomotive expenses between heavy trains and light trains; but there was a difference, and always a contention. Again, the carriage and waggon expenses depended on the number of carriages to a train. This could be always got at approximately; and the rateable value of a piece of line in a parish was just as easily ascertained as the rateable value of the whole. There were many miles of railway, and many branches where the railways were worked by Companies (as the author of the Paper had said) at a loss. A tenant, who examined the receipts, would give nothing for these sections of railway *per se*. Why, then, it is asked, did the Railway Companies have these branches, if they lost money by them? For various reasons—to keep competition away, to feed

their main lines, or because they created profit elsewhere, although they were a loss in themselves. This was *contributive value*. He observed that Mr. CASTLE, Sen., said that he hoped, like others, that contributive value (which he called his child) was dead. He (Mr. RYDE), however, thought that contributive value was not dead, and that it would give Mr. CASTLE more trouble yet; but contributive value was dead, so far as any practical use of the principle in valuing railways was concerned; for all the judges and experts who had considered the subject had seen that contributive value involved so much trouble and expense in its application, that it was better to let it alone altogether. After all, what was it? Assume a parish at the remote end of a long line of railway. When the train arrived at that parish it had very few passengers in it, and it did not pay its working expenses over that section of the line; but the passengers had come over the main line, and had contributed to its profitable working higher up. Hence it was said that this piece of unremunerative line possessed a contributive value. This might be all reasonable enough; but look at the difficulties which arose directly it was sought to apply the principle. If it were true that the last five miles, and the worst part of the line, had contributed to the value of another portion of the line above, and had therefore to be rated at more than it was worth *per se*, then the next five miles had equally contributed something to another section of the line higher up still, and so on with every length of the line, until it would be found next to impossible to deal with that part of the line which had been contributed to by all the rest, and the whole question assumed an impracticable form.

To put the case shortly, there was no sounder principle than to rate the property in each parish as you found it, and that was real rating law.

In conclusion, Mr. HEDLEY's proposition, as he understood it, was this—that, first of all, the rateable value of the entire undertaking should be ascertained; that from that rateable value the rateable value of the stations should be separated, and what was left, viz., the rateable value of the railway itself, should be divided among the parishes in one of two ways. By reducing the railways to single lines, adding up the whole and dividing the rateable value of the whole, without the stations, by the total length of those single lines; then, if the division gave £300 a mile, each mile of single line, say through Battersea Fields, should be worth £300; a mile of sidings in an obscure station would be worth the same; and the six lines on the London side of Clapham Junction should be worth £1,800, and so on. That was the way suggested for meeting the difficulties of railway rating. The alternative plan was this:—Having ascertained the rateable value of all the railways without the stations, that rateable value should be divided between the lines in proportion to the gross receipts upon those lines. The author of the Paper seemed inclined rather to abandon the first of the principles, and had, perhaps, withdrawn it, for in his second Paper there was no mention made of it.

He did not believe that either principle would work. There were miles of sidings laid down on railways which had become useless from the altered mode of using stations; and to assume that every siding was of the same value, and that any of the main lines near London could be rated according to the length or mileage of rail, might do no harm to Companies, but no parish containing a main line of railway would be likely to submit to it.

The following were the valuations he had referred to:—

VALUATION OF AN ENTIRE RAILWAY.

GROSS RECEIPTS—		£	£
Being the entire Earnings of the Railway for One Year from all Sources of Traffic - -			2,085,020
WORKING EXPENSES—			
Locomotive - - - -	301,563		
Carriage and Waggon - -	89,056		
Miscellaneous - - - -	491,107		
Government Duty - - - -	42,742		
Rates and Taxes, 4s. in the pound on £403,552 - - - -	80,711		
			<u>1,005,179</u>
<i>Net Receipts</i> due to Lines and Stations - - - - -			1,079,841
Gross Estimated Rental of Sta- tions, 5 per cent. on £2,085,020			<u>104,251</u>
<i>Net Receipts</i> due to Lines of Railway - - - - -			975,590
OCCUPIER'S SHARE—			
Interest, 5 per cent. on £2,085,020	104,251		
Trade Profit, 10 per cent. „	208,502		
Risks and Casualties, 2½ „ „	52,125		
			<u>364,878</u>
<i>Gross Estimated Rental of Railways</i>			<u>610,712</u>
STATUTEABLE DEDUCTIONS—			
Maintenance and Renewal of Permanent Way			207,160
<i>Rateable Value of Railways</i> -			<u>£403,552</u>

VALUATION OF A RAILWAY IN A PARISH.

	£	£
GROSS RECEIPTS - - - -		931
WORKING EXPENSES :—		
Locomotive - - - -	196	
Carriage and Waggon - -	58	
Miscellaneous - - - -	219	
Government Duty - - -	19	
Rates and Taxes, 2s. 3d. in the pound on £85 - - - -	9	
		501
<i>Net Receipts</i> due to Line and Station		430
Gross Estimated Rental of Sta- tions, 5 per cent. on £931 - -		47
<i>Net Receipts</i> due to Line of Railway		383
OCCUPIER'S SHARE—		
Interest, 5 per cent. on Tenant's Capital - - - -	47	
Trade Profit, 10 per Cent. -	93	
Risks and Casualties, 2½ per Cent.	23	
		163
<i>Gross Estimated Rental of Line</i>		220
Maintenance and Renewal of Permanent Way		135
<i>Rateable Value of Line</i> - - -		£85

VALUATION OF AN ENTIRE RAILWAY.

	£	£
GROSS RECEIPTS - - - -		2,385,280
WORKING EXPENSES—		
Locomotive - - - -	307,626	
Carriage and Waggon - -	93,139	
Miscellaneous - - - -	538,917	
Government Duty - - - -	42,501	
Rates and Taxes, 4s. in the pound	114,437	
		<u>1,096,620</u>
<i>Net Receipts</i> for Line and Stations		1,288,660
Rateable Value of Stations, 5 per cent.		<u>119,264</u>
<i>Net Receipts</i> of Line only -		1,169,396
OCCUPIER'S SHARE—		
Interest 5 per Cent. on £2,127,343	106,367	
Trade Profit, 10 per cent. „	212,734	
Risks and Casualties 2½ „ „	53,184	
		<u>372,285</u>
<i>Gross Estimated Rental of Railways</i>		797,111
Maintenance and Renewal of Permanent Way		<u>224,927</u>
<i>Rateable Value of Railways</i> -		<u><u>£572,184</u></u>

VALUATION OF A RAILWAY IN A PARISH.

	£	£
GROSS RECEIPTS - - - -		4,312
WORKING EXPENSES—		
Locomotive - - - -	1,175	
Carriage and Waggon - -	294	
Miscellaneous - - - -	975	
Government Duty - - -	78	
Rates and Taxes - - - -	—	
		<u>2,522</u>
<i>Net Receipts</i> due to Line and Stations		1,790
Rateable Value of Stations, 5 per cent. on £4,312		215
		<u>1,575</u>
OCCUPIER'S SHARE—		
Interest, 5 per cent. on £5,800 -	290	
Trade Profits, 10 per cent. -	580	
Risks and Casualties, $2\frac{1}{2}$ per cent. .	145	
		<u>1,015</u>
<i>Gross Estimated Rental of Line</i> -		560
Maintenance and Renewal of Permanent Way		1,264
		<u>Nil.</u>
<i>Rateable Value of Line</i> - - -		

From these Valuations it would be seen that in one case the Rateable Value of the entire Railway amounted in round figures to 20 per cent. of the Gross Receipts, and in the other to 24 per cent.

By the proposed distribution of Rateable Value, a Parish which could now rate a Railway at £85, might rate it at £186, viz. :—20 per cent. on £931 of Gross Receipts, while a Parish in which the Rateable Value of a Railway at the present time was merely nominal, might rate a Railway at £1,035, viz. :—24 per cent. on £4,312.

Would the Parishes which now enjoy a higher Rateable Value, but from which something must be deducted if an addition be made in other Parishes, submit to the deduction? He thought that they would not do so.

[The report of Mr. PHILBRICK's observations is unavoidably delayed.]

On the motion of Mr. R. P. WILLIAMS, the discussion was adjourned until the next meeting.

AT
THE ORDINARY GENERAL MEETING,

Held on Monday, February 17th, 1879.

THE PRESIDENT IN THE CHAIR.

The discussion on Mr. HEDLEY's Papers on "The Rating of Railways," and on "Terminal Charges," was resumed by

Mr. E. P. SQUAREY (Member), who said that he thought the Institution was to be congratulated on the ability with which the whole question of railway rating had been treated in the discussions which had taken place. If no definite result had yet been arrived at, the whole question had at any rate been thoroughly ventilated and examined by many very able Members and Associates of the Institution.

There were but two points to which he proposed to address himself. One of these points was the allowance which should be made to the hypothetical tenant in arriving at the rateable value. This allowance was taken by Mr. RYDE, on the last occasion, at the usual amount and in the usual form, viz., interest on capital, 5 per cent.; trader's profits, 10 per cent.; and risks and casualties, $2\frac{1}{2}$ per cent. He (Mr. SQUAREY) looked upon the 10 per cent. for trader's profits as excessive, and he would give his reasons for holding the opinion. It would be admitted, he thought, that, in most businesses to which rateability attached, a profit of 10 per cent., plus 5 per cent. interest on money as a first charge, was more than the occupiers of such property,

as a rule, were making. The hypothetical tenant, in the case of a railway, occupied an analogous position to a sleeping partner in a large business. For 30 years past the accounts of Railway Companies had been kept in the clearest and most admirable manner, and the condition of the rolling stock and permanent way was known and vouched for by competent officers. There was, therefore, no doubt as to the real state of things at any given time, and no such element of uncertainty as would warrant an exceptionally large margin of interest on capital invested.

The tenant's capital was, practically, represented by the rolling stock; and he could see no sufficient reason for allowing so large an amount as 10 per cent. for profits, after 5 per cent. had already been allowed as interest on that capital. Did any one believe that, if the hereditament were really put into the market, like a farm, the man who rented it would have any difficulty in obtaining by subscription, to carry on the undertaking, an amount of capital equal to the value of the rolling stock and plant of the railway, at 5 per cent., leaving him a margin of, say, $7\frac{1}{2}$ per cent. over and above the 5 per cent. to guard him against risks in carrying on this business? It must be remembered that every single item of expense of management, control, and supervision was exhausted from the accounts which formed the basis on which the rating was begun. He believed, therefore, that a much smaller allowance than 10 per cent. would be found, in practice, sufficient to attract real tenants for railways, if to be let.

It was obvious that this was so, for there were people found to subscribe for the whole cost of constructing the entire hereditament who were content with $4\frac{1}{2}$ or 5 per cent. on their investment. His opinion was that $7\frac{1}{2}$ per cent. for tenant's profits, in addition to the 5 per cent. for interest on money— $12\frac{1}{2}$ per cent. altogether,—would be a

very reasonable and proper allowance to the hypothetical tenant. Then $2\frac{1}{2}$ per cent. was allowed for risks; but as a matter of fact these risks were covered over and over again in the accounts of the Railway Companies. There was practically no risk or expense left uncovered, if the accounts were sound, and, therefore, no justification for the extra allowance of $2\frac{1}{2}$ per cent. existed.

The other point to which he would refer was as to the rating of branch lines. No doubt, contributive value was dead and buried; still, it occasionally happened that there was something over and above the mere parochial earnings to be considered in valuing a branch line. Assume a branch line between two main lines in competition with each other. In this case, the hypothetical tenant ceased to be hypothetical, for the two main lines competed with each other for the tenancy of that branch line. Would it be contended that, in this case, the rateable value was nothing more than the parochial earnings of that line? Surely, the juster view would be that the rateable value of that branch line should depend upon the sum which either of these competing Companies would be likely to pay for it.

MR. F. MEADOWS WHITE, Q.C. (Associate), said he had to claim the indulgence of the Institution in addressing to them a few words on the subject of this discussion, after the long consideration which it had received, and deservedly received, at the hands of Members; but, by the accidental course of his profession, he had been (if he might say so) more than usually brought into contact with this particular branch of the law, and, as a legal Associate, he hoped he might be thought justified in contributing to the discussion some of the results of his experience. Bearing in mind the caution of Mr. E. J. SMITH, against entering too much into detail in the present discussion, he had proposed to

confine himself to the chief point of interest in Mr. HEDLEY's criticism of the Law as it is,—the question of Contributive Value,—and to the principle of amendment proposed by him; but he was tempted by Mr. SQUAREY's observations to touch upon one or two points of detail, upon which he could not quite agree with him. From what that gentleman had said, he thought he (Mr. SQUAREY) had somewhat misapprehended the reasons for the 10 per cent. deduction for, what was sometimes called, "tenant's profit." This was a misleading term; the 10 per cent., which, as Mr. RYDE and others had said, was allowed readily by parishes to Railway Companies, was not intended solely to cover profits upon the occupation of real property—such as was claimed as tenant's profit in rating a tithe rent-charge, for instance—but also, and chiefly, the trade profit attributable to the trade of the carrier, as distinguished from the occupation of the land. Going back to the time before railways existed, it would be found that the carriers, who then had the carriage trade of the country in their hands, had not to provide the road as Railway Companies had, but had the roads provided for them; but they had to provide offices, carts, horses, &c., and all such matters as were necessary for the trade of carriers. Now a Railway Company not only was engaged in the trade of a carrier, but the roads themselves were in its occupation, and the 10 per cent. was to cover not only tenant's profit, as if they were only the occupiers of the soil of their railroads, but, also, such profit as the carriers, before the time of railways, made out of their trade, and was fairly attributable to their trade capital invested in their concerns. He (Mr. WHITE) thought that Mr. SQUAREY had not given weight enough to this consideration.

There was another point also which Mr. SQUAREY had referred to. He said there were no risks which were not

provided for by the allowance in the accounts for the ordinary compensation for injuries to passengers and goods. But those were not all the risks proposed to be covered by the $2\frac{1}{2}$ per cent. In assessing a railway, the experience of the past years was taken as a guide, and the receipts of the past year as an initial point. A tenant proposing to take a railway would reasonably expect a certain margin to cover such causes of fluctuation as bad seasons, depression of trade, and so forth. All matters, such as these, were included in, and not unfairly represented by, the $2\frac{1}{2}$ per cent. usually allowed under this head.

There were only one or two other matters of detail which he would trouble the Meeting with before he came to the two principal topics to which he had referred. He did not pretend to exhaust Mr. HEDLEY's Paper, nor must he be taken to agree with every observation therein from which he did not express his dissent; but there were two or three matters of detail discussed in it, upon which he would touch very briefly. Mr. HEDLEY quarrelled with two allowances made by the Railway Commissioners (see p. 82),—the one an allowance of £2 per cent. on the stock which had been improved out of revenue; the other an allowance of £50 per mile for renewal of the permanent way, although this had been improved out of revenue. Mr. HEDLEY said these deductions were contrary to law. In principle the deductions were, in his (Mr. WHITE's) opinion, according to law. It was clear law that the tenant's capital, invested in rolling stock, was to be taken at its present value in its present condition, whether bad or good, and it was immaterial out of what funds it had been brought to that condition, and it was right to charge not only a proper sum for maintaining it, but also a fund for renewing it. So with the permanent way. It was right, over and above the cost of maintenance, to charge

a sum to provide for the renewal which must take place at some future period. The Commissioners were, therefore, right in their principle. If they charged these matters twice over in the particular case, it was a mistake of detail in the particular case. Mr. HEDLEY however did not make it at all clear that they had done so.

He now proposed to pass to the two questions which he had mentioned—the one relating to the law as it is, the other to the proposed amendment of the law. First, as to the question of what was called, in general terms, “contributive value.” He trusted he should not anticipate anything that Mr. CASTLE might wish to say in his promised Paper; but the really interesting question now arising in railway rating was the question of so-called “contributive value;” and everyone who was engaged in rating railways, whether as lawyer or valuer, might be called on to deal with it. It was by no means dead in all its forms or shapes. Now, Mr. HEDLEY had used the expression “the glorious uncertainty of the law.” This was not a just expression: law was not uncertain, the uncertainty arose in the application of the law to the facts. The law might be laid down as precisely as Sir FITZJAMES STEPHEN could do it; but difficulties and differences would, nevertheless, arise in the application of the facts to the law, or of the law to the facts. Where the legal definition was so wide as that given of “gross value” and “rateable value” in the Assessment Acts, uncertainty would necessarily arise in its application, as, *ex. gr.*, in the evidence on one side or the other, by Surveyors; and these apparently irreconcilable differences on questions of fact might cause a great deal of perplexity to the tribunals who had to decide these questions. This was partly the reason for the apparent discrepancy in the decisions on the question of “contributive value.” These decisions were, from one point of view, not

so much decisions of principles of law, but the outcome of the attempts of the Court in *Banc* to deal with facts imperfectly stated. The legal definition was, in substance, the rent which a tenant (such as the statute contemplated) would pay, and then came the question on the facts of the case, who was the tenant, and what was he likely to pay. Cases had certainly existed where Railway Companies had been willing to pay, in the shape of guarantees on stock or large proportion of receipts, and so forth, what was equivalent or analogous to rent for the possession of small lines or branches, or of comparatively useless pieces of Railway, far exceeding the actual annual profit to be got out of them, which would govern the estimate of the rent payable, made according to ordinary rules. The Courts, which had before them statements of facts upon which the Sessions had decided—improperly it might be,—could not go behind them and decide otherwise. For instance, in the *Kempton Case* (*R. v. L. & N. W. R. C.*, L. R., 9 Q. B., 134), a good example of this, the Court assumed (pp. 143, 146) that paragraph 10 of the case applied to a tenant from year to year who (it was found) would give that rent for that piece of railway under the circumstances; and therefore the Court said that this circumstance should be taken into account.

So also is what may be called “The Irthlingborough Case” (which Mr. HEDLEY had introduced to notice), decided in 1876, and only reported in the *Justice of the Peace*, vol. 40, p. 790, under the name of *L. & N. W. R. v. The Churchwardens of Irthlingborough*; Mr. HEDLEY persuaded a very impressionable Court of Quarter Sessions to decide, upon what, to a lawyer’s mind, was not evidence but mere hypothesis, that the particular railway, although it was not so in fact, yet *could* be worked at a certain percentage upon the receipts, the balance being taken to be the rent, an allowance, based on no principle, being made for tenant’s profits. And

it was found by the Court of Quarter Sessions, in what Mr. Justice BLACKBURN called "a badly stated case," that this line could be let at this rent. What could the Queen's Bench, when the case came before them, do? They said, in effect, "You have told us that a tenant would take that line at that rent," and the Court of Queen's Bench was bound by that finding. It was a pure question of fact, that a hypothetical tenant would give that rent for the railway, and so the Court found. This was how Mr. Justice QUAIN put it. The report of the case is very confused, and the other reporters passed it over in silence. The only value of that decision (and to this extent it must be regarded as an authority, in calling attention to which Mr. HEDLEY had done useful service) was, that the Court recognized the principle laid down by the Kempton Case, and judicially recognized the fact that there might be circumstances under which, although a railway was not earning what was called a net profit, still it might have considerable rateable value.

Now, the question of "contributive value," according to what seemed to him to be the present state of the legal authorities, might be divided into two parts. The one group of cases consisted of the Haughley Case (1866, L.R., 1 Q.B., 656), the Llantrissant Case (1869, L.R., 4 Q.B., 354), and, perhaps, one of the Great Western cases. The other group consisted of the Dorking Case (1854, 3 E. & B., 491), founded on the Amwell Case, the Cannock Case (1863, 9 L. T., R. S., 325), the Kempton Case, before cited, and, finally, the Irthlingborough Case. It seemed to him that the distinction between the two groups was this: the Courts had before them, in the Llantrissant and Haughley Cases, the ordinary conditions of a continuous line of railway—whether a main line or a branch and main line, worked by a Company as inseparable parts of one and the same system. Mr. CASTLE, speaking of

the Haughley Case, had spoken of "contributive value" (as brought forward in that case) as his child which was dead. He (Mr. MEADOWS WHITE) agreed with Mr. CASTLE, and thought he might say that no arbitrator or Court of Quarter Sessions, having to deal with circumstances such as those in the Haughley and Llantrissant Cases, would be justified in departing from these decisions. After further explanation of the circumstances and facts and decision in the Haughley Case, Mr. WHITE concluded that in these, the ordinary cases, the Courts decided that it was right to regard the earnings and expenses in each parish, and to assume that the traffic was managed in the parish according to the existing exigencies of the traffic; and that the circumstance that the traffic receipts were greater in one parish than another, and that they were earned at a greater or less expense in one parish than another, was what might be called a "parochial accident," of which the particular parish must get the benefit or bear the burden. Again, how could it be properly said that a branch enhanced the value of the main line because a passenger joining the branch passed over the main line? According to the principle universally adopted, the fare of the passenger was apportioned according to mileage proportion in every parish, whether on the main line, or the branch through which he passed. It might just as well be said that a main line contributed to or enhanced the value of a branch line. Supposing a case of a branch line, thirty miles long. A passenger joins on the main line ten miles from the branch, and runs over that ten miles and the thirty miles of the branch. Were the ten miles to have additional value attributed to them in rating, because this passenger had paid also for the thirty miles?

He held the opinion that in this particular matter the Courts, in the Llantrissant and Haughley Cases, had acted rightly in holding that the parishes on the branch or on one

part of the main line cannot in such cases be said to contribute to or enhance the value of the main line, or other parts of it, and that the usual apportionment of the earnings and expenses, according to what was called the parochial system, was in such cases right.

It seemed to him that if a tenant were supposed negotiating for a parochial fraction of the line, he would not do more than say, "What can I earn on this particular part of the railway— what have I to earn, receive, and pay?" He would say "the receipts are so much, and the expenses were so much, what capital have I to invest for working this part of the line, as it is now worked, according to the exigencies of traffic, in connection with the other parts." But the other group of cases depended on quite a different principle.

After discussing those cases, Mr. MEADOWS WHITE summed up their effect thus:—In all these cases it was found in substance as a fact that, for certain branches or portions of railway, a tenant from year to year would give a rent governed by other considerations than the mere net earnings; and that, therefore, they are bound to take this circumstance into consideration in determining the question, what was the rent which such a tenant would give?

Before parting from this subject, he must make one observation. According to his view, although certain dicta in the various cases, taken apart from the contexts, might appear to conflict, yet he could not agree that any of these cases could be considered as overruled. We have the authority of Lord BLACKBURN, in the Kempton Case (at p. 140), that he was unable to see how the Haughley Case bore on paragraph 10, which was the paragraph upon which the judgment in the Kempton Case proceeded. Lord BLACKBURN further pointed out that, in the Llantrissant Case, the principle of the Dorking Case was not overruled, but that the Court decided that, under the circumstances of the

Llantrissant Case, the branch line could not be said to enhance the value of the main line.

The judgment of Mr. Justice MELLOR, a most experienced and practical judge in rating matters, in the Llantrissant Case was founded on this, and he pointed out that the Haughley Case governed the Llantrissant Case ; and that he and the Lord Chief Justice were of one opinion in the Haughley Case, and that it must be taken that the Lord Chief Justice did not quite adhere (not to the decision), but to the suggestion he threw out in the Cannock Case (see L.R., 4. Q.B., p. 357).

Both groups of cases, in short, must be considered as standing together, and if special circumstances existed such as to justify such a decision of fact as in the Kempton Case, the principle governing that group of cases must have its weight. Such cases would be very rare, but they might well exist, and he (Mr. MEADOWS WHITE) had one in his own practice now, *sub judice*, in which the facts justified an argument, which he intended with some confidence to address to an arbitrator, that the Kempton Case was applicable.

He would now pass to the second point—Mr. HEDLEY's proposed amendment of the law. Mr. HEDLEY did not profess indeed to introduce it as a novelty, but he founded it on the law of Scotland, as enacted by 17 and 18 Vict., c. 91, and the amending Act, 30 and 31 Vict., c. 80. The Commissioners who reported to Parliament on Railways in 1863 also recommended in general terms some such an amendment of the law. They said :—" We suggest that, in order to meet the inequalities of the local taxation of railways, some means should be devised by which some public authority, such as the Poor Law Board, should make an assessment by rating the whole Railway, and then divide the amount according to an equitable principle between the several unions and parishes." But

the Commissioners did not attempt to solve the great difficulty as to how that equitable distribution should be effected.

As Mr. HEDLEY had not attempted to introduce this as a novelty, he (Mr. MEADOWS WHITE) might perhaps be pardoned for saying that he himself had had something of the sort floating through his own mind; and, no doubt, one risk and mischief would be clearly avoided. The question was whether they might not fall into other mischiefs which would be, perhaps, more or less serious. Certainly, a railway could not be rated twice over if the total rateable value of a railway were ascertained and apportioned over the whole line; if a railway and the company paid only on that, no doubt the risk of double rating would be avoided. But the parishes had to be considered as well. The new Valuation Bill, so far as he was informed, did not attempt to do away with the old parochial principle of assessment, and therefore the circumstances and claims of the various parishes, as Mr. RYDE had pointed out, would still have to be considered. Now, it was clear the Scotch plan would not, in its entirety, suit this country. The definition of rateable value and the law as to deductions was not the same in both countries, as would appear by reference to the statutes cited. The mileage division, which was adopted in Scotland, he understood that Mr. HEDLEY had himself given up; but he had proposed, as an equitable apportionment, to divide according to the gross receipts.

He gathered that Mr. HEDLEY proposed to arrive at the rateable value of a railway as a whole in the ordinary way, ascertaining, as a step in the operation, the net receipts of the line, and to apportion that rent or rateable value according to the gross receipts. This mode of apportionment was undoubtedly preferable to a mere mileage division, but he (Mr. MEADOWS WHITE) wished to point out this, that whether a

change of principle were desirable or not (and they had Mr. RYDE's evidence, which he considered very important, to the contrary, that it was undesirable we should make a change), yet even the mode of apportionment did involve a change of principle, because, as soon as an apportionment was made according to the gross receipts, the parochial system was in a great measure departed from. And for this reason : this rateable value was apportioned according to the gross receipts, equality of expenditure in earning these receipts over the whole line being assumed.

If, on the other hand, the apportionment was according to the net receipts, there was the trouble which was supposed to be avoided in apportioning according to the gross receipts, of finding out what was spent in each parish ; and thus one got back in substance to the old system. He did not say for a moment that the following figures, which were merely taken hypothetically for purposes of illustration, were accurate in all respects, but he hoped they would illustrate what he had said. He would suppose a railway producing £100,000 a-year gross receipts. He would take the expenses, for the mere purpose of calculation, at half, or 50 per cent., which would leave £50,000; from this deduct for stations 5 per cent., or £5,000, leaving £45,000. Now from that deduct, for "Tenant's profits," &c., $17\frac{1}{2}$ per cent. on gross receipts, which would be a sum of £17,500 ; which would leave £27,500. Then he would take 10 per cent. for maintenance and renewals, or £10,000, and deducting this from the £27,500, an entire rateable value on the whole line of £17,500 would be arrived at. That was the sum which, on the hypothesis, had to be distributed among the various parishes. Supposing that the railway ran through seven parishes, A to G inclusive, and that the £100,000 gross were divided among the parishes as follows, the £17,500 (or the rateable value) being apportioned accordingly :—

	Gross.	Net.
Parish A	£1,000 .	£175
„ B	5,000 .	875
„ C	9,000 .	1,575
„ D	15,000 .	3,150
„ E	18,000 .	3,850
„ F	22,000 .	3,850
And Parish G (in which stood the terminal station) . .	30,000 .	5,250
	<u>£100,000</u>	<u>£17,500</u>

Precisely the same results would follow if the railway were assessed in the parishes separately, taking the same proportion of expenditure to receipts—viz., 50 per cent. in the case of each parish.

That was Mr. HEDLEY's system of apportioning according to the gross receipts. But everybody knew that, in point of fact, expenses varied or might vary in point of fact in each parish. Take the Haughley Case, for instance, and Mr RYDE had given another striking instance at the last Meeting. In order to earn the receipts in a parish one might be compelled (as in the Haughley Case), by the ordinary exigencies of working the traffic, to use unnecessarily long trains, if the traffic in that parish were alone regarded, so that the expenses and other deductions might be greater than the receipts, and the railway in that parish might not be able to pay its way.

Now he would deal with the case on the hypothesis, which was the true one, that the proportion of expenses and earnings was not uniform, but varying. He would assume that a train, worked according to the general exigencies of the traffic, after doing its work along the line, came into parish A with few passengers in it, and started again on its return journey with but few passengers, but filling up as it went along towards parish G : so that it cost not £500

but £750 to earn the £1,000 in parish A ; £3,500 to earn the £5,000 in parish B ; £6,000 to earn the £9,000 in parish C ; £8,500 to earn the £15,000 in parish D ; £9,000 to earn the £18,000 in parish E. In parish F he would say it cost only £10,000 to earn £22,000 ; and in parish G, to earn £30,000, it would cost only £11,750. Adding these figures of receipts and expenses together, it would be found that they amounted to £100,000 and £50,000, as in the former cases : the £50,000 being differently apportioned to the parishes.

Now, on this assumption of varying expense, and substituting in the calculation these sums of expense for the 50 per cent. of the former calculation, there would be a loss of £75 per annum in parish A ; a loss of £125 in parish B, where £5,000 was earned ; a loss of £425 in parish C, where £9,000 was earned ; a rateable value of £1,625 in parish D ; of £3,150 in parish E ; of £4,850 in parish F ; and of £8,500 in parish G, where the £30,000 was earned. On adding all these rateable values together, and deducting from the total the amounts of the three losses in parishes A, B, and C, £625, it would be found that the rateable value of the whole was £17,500, the same figure as before, but differently distributed, according to the net receipts in the various parishes. Therefore, the railway would have been rated at its proper rateable value, except so far as this—which would be a misfortune to the Railway Company—that, if this were a real case instead of a hypothetical case, the Railway Company, while having to pay rates on the rateable values in parishes D to G, or a total sum of £18,225, would, or ought to be rated at nothing in parishes A, B, and C ; but would not get any deduction in respect of the losses, and, therefore, would have to pay rates on more than its rateable value.

These figures showed that Mr. HEDLEY's plan of apportioning according to gross receipts would, if the parochial

system of rating were still to be retained, establish an exception in the case of this particular class of property, and break in upon it. The whole matter of the suggested amendment was, however, a case of political expediency. Though, as he had said, this had been floating through his mind it had never shaped itself to any practical form, because he believed that such a change would, hitherto, have been quite impracticable. Nor was the present system really so glaringly at fault as was suggested.

He disbelieved altogether Mr. HEDLEY's estimate of the abundance of the crop of appeals in this country. There was opportunity for appeals, no doubt; but it was owing to the good sense and to the practical understanding of the Surveyors, who had to meet each other on these questions through the country, that there were not more; and it was most creditable to the rating authorities how these difficult problems had been met and practically solved. He agreed with Mr. RYDE on the whole (and upon such a point as this Mr. RYDE's opinion was especially valuable and ought to have great weight) that looking at the enormous labour and expenditure of time and money which would be necessary, and also looking at what the result would be, it would not be expedient to introduce the proposed change.

He doubted whether, so long as the definition of rateable value remains as it is, and so long as the parochial system is retained, whether the benefit of such a change would be commensurate with the enormous trouble, expense, inconvenience and disturbance of that change. Consider what it would be, as a preliminary step in the process, to value the cost of all the stations in England. But this part of the subject was perhaps not so much a lawyer's question, though he had ventured to address the Meeting at some length on the point. It was rather for practical men to deal with it as a question of expediency, and for his own part he

did not think, so far as he could form an opinion, that sufficient reasons had been shown for making this change.

It was to be observed that in Scotland the Assessor for Railways was only a special Assessor among Assessors ; as there were Assessors appointed for every county and borough to rate all classes of property, except railways and canals, the Water and Gas Companies having the option if they pleased, of having their properties assessed by the Railway Assessor. Mr. HEDLEY's plan would be, to appoint a tribunal altogether exceptional, and with instructions to assess upon a principle which, as it seemed to him (Mr. MEADOWS WHITE), though less objectionable than the Scotch system, yet materially infringed upon the parochial system as applicable to other rateable hereditaments.

He (Mr. WHITE) did not by any means say that the present system of rating as applicable to railways was absolutely perfect. It might be improved in many points of detail. One most important amendment which he had mentioned on former occasions in that room, was a better and more certain right of appeal ; but these were matters of detail with which he would not now trouble the Institution.

Mr. R. D. M. LITTLER, Q.C. (Associate), said that he had not intended to take part in the discussion, but the question was of great interest to his profession as well as to Surveyors. One question which Mr. MEADOWS WHITE had asked he very strongly concurred in :—had there been, broadly speaking, any sufficient reason shown for any change in the principle on which rating was now carried out ?

It had been said truly that it cost the country £40,000 a year to interpret the Judicature Act, and it was just possible that similar results, though in a less degree, might follow an attempt to disturb the existing system of rating by adopting the amendments in the law suggested in Mr. HEDLEY's

Paper, which would be a long time in shaking down into a workable form. He failed to see that any sufficient reason had been shown for assessing railways on any other principle than that applied to other subjects of rating, though doubtless there were practical difficulties. A good deal of the confusion complained of at present was due to the very variable tribunals before which these matters were brought. Some of the Courts of Quarter Sessions were much more impressionable than others, and consequently there were considerable differences in the conclusions at which they arrived.

It would, he thought, be a change for the better if the Railway Commission were constituted a branch of the High Court of Justice, if under a single judge, bound by all the ordinary rules of law, and from whose decision there could be an appeal, as in the Court of Chancery, as to fact as well as law, to deal with railway assessments. At the present moment the Courts of Quarter Sessions, (for which he had a great respect,) sometimes arrived at very absurd decisions on points of fact. In instances of the kind, the Court of Queen's Bench had to exercise its ingenuity while showing its respect for the Court below by assuming the correctness of the facts so found, in endeavouring to apply the principles of law to these facts as presented. The superior Court sometimes succeeded and sometimes failed in the endeavour to satisfy the requirements both of the law and common sense. One great source of difficulty was the circumstance, that the tenant for the railway must, generally speaking, be hypothetical, and this difficulty was increased where the railway ran through many parishes; but it seemed to him that, if the tribunal had power to deal with law as well as with fact, and if Railway Companies or parishes had absolute power of appealing in all cases, a great deal would be done towards settling the law

and its application on the principles laid down by Mr. RYDE, whose views he fully endorsed. With one tribunal for the whole kingdom, laying down uniform decisions (subject to appeal to the highest Court, if necessary), we should gradually secure an assemblage of comprehensible decisions, which would rid the question of those difficulties of fact which produced what had been called "uncertainties of the law," and it would be as easy to rate a railway as to rate a cottage or any other similar property. But this, as he had said, could never be done unless the same tribunal decided matters of law and matters of fact.

Mr. JOHN WORNHAM PENFOLD (Honorary Secretary) said that he did not very often obtrude his own opinions upon the Institution, but as the subject was one in which he had always taken considerable interest, he might, perhaps, be allowed to say a few words on the present occasion. First he wished to place on record his personal thanks, as Secretary, to Mr. HEDLEY for bringing forward in so able a manner the subject which had given rise to the discussion, as one of the most anxious cares of the Officers of the Institution was that of procuring Papers on popular subjects which would elicit the various opinions of the different sections of Members conversant with the special subject.

It was stated in the Paper (page 97), "That the only practical amendment of the law of rating railways that could be made in England was by the appointment of an assessor (or assessors) by the Crown or Quarter Sessions to value all the railways, canals, &c., in England and Wales, with similar powers to those conferred upon the assessors in Scotland." The author seemed to think the appointment of such assessors was, at any rate, one of the most important amendments required in the law of rating. It would be well, therefore, to refer to that first. He (Mr.

PENFOLD) could quite understand that it might be a great administrative convenience to parishes and companies if a special set of officers should have to deal with the large interests which had been mentioned. It was clear there must be several, if not many assessors, and if no exact principle of valuation were decided on, each would be left to his own devices. One might follow entirely the Scottish system, because it was "easy," or, as Mr. HEDLEY said, "a simple process." Another might be a disciple of Mr. HEDLEY, and allocate his rateable value in proportion to the gross receipts; and a third might prefer Mr. RYDE's system, and deduce his rateable value from the net receipts. Thus there would be as many conflicting modes of rating as at present. On the other hand, if any particular system were enjoined by Act of Parliament, assessors would not be wanted, because every Surveyor would follow the same practice, and the assessment committees would be in unison all over the country, there being no more difficulty in valuing a part than the whole, when once the principle of apportionment was fixed. It appeared to him, therefore, that the question of the appointment of assessors should be argued quite irrespective of any change in the existing law of rating; and if it were found desirable to deal with railways and other such undertakings in some special manner, it must be remembered that there were many cases, such as those of breweries, distilleries, and other manufacturing premises, in which the law (or perhaps he ought to say the application of its principles) was equally uncertain.

With regard to the principle of rating railways, all were agreed that they should be rated exactly as other properties, and he would not have ventured to say a word on this subject but that an idea seemed to have got abroad, and was alluded to by some of their legal friends,

that railways were, in fact, dealt with on some abnormal principle, and that while in rating a shop or other property profits were not taken into consideration, profits alone were made the basis of the valuation of railways. The principal illustrations to which attention had been called were those of farms and a shop, such as that of a confectioner opposite Charing Cross Railway Station. He thought that these were the very instances in which profit *would* be taken into consideration. For what was it that made a confectioner's or any other shop opposite Charing Cross Railway Station more valuable than a place with similar accommodation a few yards round the corner? Clearly because there was a larger profit to be made in the one place than in the other. Why did one farm let at 20s. an acre and another at 40s.? Simply because of the difference in profit to be made. Why, for instance, were corn rents so much in vogue some years ago? Because the rent and the profits earned should proceed *pari passu*. There were, of course, other conditions which had to be taken into consideration in valuing such properties, and which would regulate the proportion of profits which the tenant would be inclined to lay aside or the landlord be able to enforce as rent:—as, for instance, the fact that, while the position might not give a monopoly of the trade the confectioner might have a dozen houses from which to choose, either of which might equally answer his purpose. So the competition for a farm to be occupied for residential purposes might bring up the rent something beyond what would be expected from a mere calculation of profits; but the fact remained that the only difference in value between two properties, *ceteris paribus*, was regulated by a comparison of the profits to be made in each, whatever might be the proportion of profits allocated as rent.

It might be noted that all the agricultural authorities on the theory of valuing farms gave the most elaborate calcula-

tions of the gross takings, deducting therefrom all expenses, and an allowance for interest on capital and tenant's profits, the residue being the rent or landlord's share. It was curious, with reference to what had been said by some of the speakers as to allowances on capital, that BAYLDON (formerly a great authority on these matters), in his work on rents, gave the tenant 5 per cent. as interest on his capital, and 10 per cent. for trade profits, the exact amounts now usually allowed in railway rating. It was true BAYLDON did not propose to allow anything further as "risks and casualties;" but as he made his calculation on a four years' average, there was not so much necessity for this provision.

Of course, in most of these cases of farms and shops, and so on, there was no occasion for that minute inquiry into profit which was made in the case of railways, because an able Surveyor would know, by experience, that a given piece of land should produce such and such a rent; but no Surveyor, he supposed, if asked the reason why one farm or one shop was more valuable than another, would say "simply because it is."

Again, the question of skill in management would often largely affect the profits; but, in any case, where calculations were based directly or indirectly on profits, it was assumed that those profits only were considered which arose, or ought to arise, from ordinary prudent management. So, with a railway, if it were found that locomotive expenses, for instance, were higher in a particular case than the ordinary prudent management of a railway would warrant, only what ought to have been spent was allowed. Perhaps an illustration more on "all fours" with a railway might be found in a public-house, where the circumstances gave, practically, a monopoly of the trade of a locality. In fixing the rent, the first question asked would be, "How many barrels

does it do a month?" and the rent would be regulated, to a great extent, by the answer.

The author himself seemed to think (page 83) that railways were treated a little differently to other properties. He said, "If the rating of agricultural lands, shops, warehouses, manufactories, and mines were dependent upon the profits of the occupiers, and such occupiers were allowed from their receipts all the losses they sustained and all their expenses, including their personal services, and the same percentages on their trade or tenant's capital as are allowed to Railways Companies, scarcely any of those hereditaments in England and Wales would, in many years, be rated to the relief of the poor." This might be so, but it only proved either that occupiers of other premises were content with less profits on their capital, or that too large an allowance was made to railways on that head. It did not affect the principle. When trade was bad, and the profits did not admit of so large a rent as heretofore, the warehouses stood empty, and so escaped rating, or the landlords were obliged, as at present with farms, to reduce the rent.

He thought every one was practically agreed on the principle to be adopted in ascertaining the rateable value of a railway as a whole, or if each parish had a railway of its own. There would, no doubt, be differences in detail as to some of the deductions, the amount of capital a tenant would require, or the percentage upon this which it would be fair to set aside as his profit; but these might be settled in each particular case in the same way as other difficult questions which Surveyors met with every day. The real stumbling-block seemed to be the correct apportionment of the rateable value of the whole among its component parts. On page 93 of the Paper it was stated that "what is called the parochial principle of rating means that every few

"chains of a railway in a parish are to be treated as a separate hereditament, and to be valued as if a separate railway." He scarcely agreed with that definition of "the parochial earnings principle," which he rather considered to be a method of ascertaining the proportion which each section of a single railway contributed to the fund from which the occupier and owner derived their share. That fund was the net residue of the gross takings after deducting the working expenses, and the maintenance of way, and the value of stations otherwise rateable, whatever that value might be; and one would suppose the component parts of the whole would logically follow the same rule.

The author of the Paper disagreed with this, and proposed two other methods. One, that the rateable value of the whole railway should be allocated to the several sections in proportion to the gross receipts of each; the other (which should produce approximately the same results), a mileage system. It did not seem quite clear how this last was intended to be worked out. Unfortunately no illustration had been given but that of Mr. WOOLLEY, viz., that if the average rateable value of the whole concern came out at £300 per mile of single line, the portions having double lines would be rated at £600, those with eight lines at £2,400 and so on. It must be supposed, he assumed, that the sidings mentioned by Mr. HEDLEY were additional rails used for passage of the traffic, and not "station sidings," which would be included in the value of the stations themselves.

Suppose these methods applied to the valuation of land, and that a certain 200 acres of arable land let by itself would be worth £200, and 100 acres of pasture by itself £200, but the two together as one farm £500, and it were referred to a Surveyor to apportion the total rent between the two owners. He (Mr. PENFOLD) did not think the

Surveyor would take the "easy" course and just divide £500 by 300, making £1 13s. 4d. an acre, because that would give only £167 to the pasture, which was worth £200, without the contributive value of the arable; but that, in principle, was the mileage system. Neither did he think a Surveyor would calculate the gross takings of the arable and the pasture separately, and then divide the rent in proportion, because that, probably, would still give a large preponderance to the arable; but that was the suggestion in the Paper. He thought a Surveyor would calculate or have in his mind the *net* amount of the profit from each (for that was the fund to be shared between landlord and tenant), and would allocate to each owner the rent in proportion to such net profit, and this would be equivalent to "the parochial earnings" principle. The last method would not be quite so "easy" of calculation as the others, and some complicated questions as to the use of farm buildings or expenses common to each might arise; but he did not think the only course open to an intelligent Surveyor, if like the wagoner he stuck for a time in the mud, was to stand aside and call on Jupiter to come down and help him with an Act of Parliament.

It was suggested that this question had been discussed too much in detail. The chief value of a principle, however, consisted in its practical application to detail, and he confessed he did not quite understand how the Scottish system was applied in practice. For instance, if a line,—say, from London to Brighton, fifty miles—was of the rateable value of £50,000, and ten miles of the South Coast Railway were afterwards opened, adding traffic equivalent to a rateable value of £6,000, or an average of £100 per mile, was the rating of the fifty miles (which was clearly made more valuable by the additional traffic) to be reduced to £46,666, and the ten miles to be rated at £9,333, a larger amount

than the rateable value of the traffic carried over the whole sixty miles ?

He had in his mind a railway, the rateable value of which might probably average £700 per mile of single line. He had rated parts of this railway at less than £100 per mile of double line, while, near the Metropolis, he had rated it at more than £20,000 per mile.

If the modified mileage system were applied in this case, the result would be that the country end would be rated at £1,400 per mile,—a sum probably larger than the gross receipts,—while the metropolitan end, with, say, six lines of way, would bear only £4,200.

The scheme for dividing the rateable value in the parishes, in proportion to the gross receipts, was, as Mr. MEADOWS WHITE had said, certainly a step in the right direction. But how would it work in practice ? If a train ran ten miles, and then doubled its number of passengers for the next ten miles, the gross receipts would be doubled, but the locomotive expenses would be nearly the same ; and, for this reason, a tenant would certainly give more in proportion to the gross receipts for the last ten miles than the first ; but, according to the suggested system, the proportion of rateable value would be the same.

As he understood the principle, if one parish had a mile of railway earning £1,000, and another parish ten miles earning only the same amount, the rating on each parish would be the same, although in the latter the cost of earning the £1,000 in locomotive expenses, maintenance, &c., if not ten times greater, would still be very largely in excess of the other.

In fact, it would appear that, by the “parochial earnings principle,” the larger the amount of traffic per length mile of railway, the greater was the proportion of rateable value to the earnings, while by the apportionment on gross receipts

as suggested, the less the earnings per length mile, the greater would be the proportion of rateable value thereon—a result which he thought would not be found in accordance with the facts if the hypothetical tenant should be turned into a real one.

It must be obvious that by the mileage system, or by an apportionment on gross receipts, or any modification of these systems, the country parishes and the Companies would gain at the expense of the town parishes. He thought in the early days of railway rating that the country parishes and the Companies had in Scotland laid their heads together while the town parishes were napping, and stole a march upon them.

With regard to the second objection, that the law gave no power to make the parishes co-operate, there was certainly nothing to prevent them, and, as a matter of fact, they often did. He knew of cases in which several unions had combined. There might, however, be some improvement in the direction alluded to by Mr. PHILBRICK, (p. 185) so that, when a railway obtained judgment or settled a question in one parish, it should govern all others in the same category.

The third objection, "The conflicting decisions of the judges, and the glorious uncertainty of the law," had already been dealt with by Mr. MEADOWS WHITE and others; and he would only just say that this was not the only question about which there were conflicting or uncertain decisions, and that the decisions, with reference to fixtures and the rateability of various plant and machinery, were at least as complex as those relating to railways.

The author seemed to favour (page 94) an extension of the area or unit of rating. This might be a fair subject for discussion on general grounds, but it had little to do with the principle of rating railways. Nor could it be well applied to railways, while excluding other equally important proper-

ties which, though rateably situate in one parish, had a principal source of revenue in another.

He quite agreed with Mr. HEDLEY that the accounts which the Companies were originally required to deposit were of no use whatever in valuing a railway, or, at any rate, in any application of detail to the parishes; but his experience was that Railway Companies were always ready to give any information required if properly applied for, though if one went on a "fishing" expedition and tried to obtain information on one case to be used in another, it was only natural that the Companies should not be anxious to obtrude information on the investigator which they were not bound to furnish.

He regretted that no representative of the Railway interest specially had as yet taken part in the discussion, and that no advocate of the author's proposals had dealt with the practical difficulties of applying them which had been noticed in the course of the discussion. The only object that all had in view was rather to fix on some principle which would strictly apply in most instances, requiring a modification in special instances only, than to adhere to one which was weak and fallacious, and would have to be strained to breaking point on almost every occasion.

On the Motion of Mr. J. W. DALE, the discussion was then adjourned.

[The following remarks were made at the Meeting of February 3rd. See note, page 156.]

Mr. F. A. PHILBRICK, Q.C., (Associate of Council), said that he was sure all present must feel greatly indebted to Mr. HEDLEY and to Mr. RYDE, the one for bringing forward the subject, and the other for the very able contribution he had made to the discussion. He did not remember any topic of

discussion which made greater demand on the experience of those versed in the particular matter, nor one in which it was more necessary, in order to avoid error, to refrain from using the same terms in different senses. A striking instance of this at once presented itself.

It had been said by Mr. RYDE, and he agreed with him, that the law required no amendment. Mr. HEDLEY said, and he agreed with him, that the law was essentially defective. Now, these two statements were, on the surface, obviously at variance, yet, when it was said that the law required no amendment, by the law was meant the great principle that a railway was to be rated as every other description of rateable property in the country. But when it was said the law required amendment, it was intended that the practical application of the principle, which everybody admitted, was attended with great difficulty, and not unfrequently caused divergence of judicial opinion. Take, for instance, one comparatively minor point, alluded to by Mr. RYDE. As the law now stands, it is competent for parishes to unite together and collectively contest rating questions with a Railway Company ; but this is optional on the part of the parishes, and a Company had no means of bringing into one contest the parishes that are or might be affected by the same decision, or that were interested in the rating they desired to question, so as to have the judgment applied uniformly to all parishes in the district.

It could scarcely be denied by any one familiar with the law that these questions of railway rating greatly embarrassed the judges ; and the discord between the various decisions, and the various anomalies in both law and practice thus introduced and perpetuated, had been the subject of regret from some of our most eminent judges. However disposed one might be to adhere to a system (or rather practice) that had grown to be what it is, rather than have recourse to experiment, or adopt some more symmetrical

plan, yet it must be remembered that cases of real injustice occurred—injustice not the less felt because borne with rather than incur the certain expense and uncertain results of an appeal to the law.

No higher authority could be adduced than that of Lord CAMPBELL, who was almost unrivalled on the Bench for his vast knowledge of parochial law; and that learned Chief Justice, in a considered judgment, emphatically condemned the existing state of the law, and showed the utter inapplicability of the Parochial Assessment Act, and he (Mr. PHILBRICK) entirely differed from the last speaker in thinking that no amendment of the law was called for. So far as his judgment and experience went, he had formed a clear and strong opinion to the contrary.

The problem which they had before them was one on which all were agreed. It was to rate, according to the principle so clearly and concisely stated that evening, the undertaking of a Railway Company. But he would, at the outset, point out one thing which always struck him as showing a difference between rating a large public undertaking like a railway and other rateable property. The object was to do justice, and treat the Railway Company as other people and other traders, neither better nor worse. In point of law there was no difference in principle in rating the Railway Company which carried on its business between Charing Cross and Dover, say, and the other stations on the line, and the trader at Charing Cross who occupied premises and sold confectionery opposite the station gates?

In rating a trader who occupied a house, what would be thought of the rating Surveyor who proceeded to ascertain the rateable value by finding first that the trader's books showed he made a gross profit in his shop of so much, then made deductions for wages and other expenses of trade,

then allowed for fixtures and interest on capital, and finally, having raised a proper trading account, and thus got at a net result, were to assess the trade profit at 10 per cent., and claim that the balance should be the rateable value of the occupation.

It would at once be said this was the reverse of the process usually applied in valuing hereditaments for rating:— a valuer does not take every penny of income, and then proceed to reduce it to a net result, but he forms his opinion by looking at the fact that the trader was carrying on a particular business, and would consider that the profit which he made out of it might depend on a variety of circumstances—the trader's individual skill and energy, the amount of competition he had to cope with, situation, and so forth. Taking all these into account as, at most, indirect factors, he mainly looked at the immoveable property, at the fact that there was so much land, in such a position, with such a building on the site, that the house cost, or is worth so much as a structure, and that the combined land and building, with all its capabilities and advantages, is let for so much, and then, using all these elements, he arrives at the rateable value of that property, estimating the fair value between man and man, and not proceeding by a process of exhaustion, having first swept every return into his net, and then jealously scrutinizing every item he lets go in diminution. And yet this was the way a railway, gas, or water undertaking, was rated; and it was said that there was no other way of practically arriving at a result. That might be so; and if the fact that both profits of a trade and beneficial occupation of real and immoveable property enter into the net earnings of the undertaking be steadily borne in mind, and the proper proportion of the profit made, fairly allocated to each head, so that all the benefit be not placed on the subject matter of the rating,

a fair conclusion could undoubtedly be come to; but the inversion of the ordinary process had a tendency to cause all profit to be attributed to the land which could not be clearly proved to be due to the trading, and this would produce a fallacious and unjust result.

Passing on, however, it was settled law and practice that the parochial principle must be applied to the rating of railways as well as to every other description of property. It was the principle upon which all local burthens were imposed in this country, and until that was altered, with regard to general internal taxation, it was clear it would continue to regulate the imposition of rates. While fully recognizing the necessity of rating according to that principle, yet, unless a system of ascertaining the total rateable value of railways, somewhat in the fashion Mr. HEDLEY proposed, and which, indeed, no preceding speaker disclaimed, as the basis of the rating in the parish, it appeared there would be great likelihood of injustice. It was clear an amount of trade profits was included in the gross amount first arrived at, a considerable part of which was often left to be rated, as against a corporation, which, in the case of an ordinary trader, never enters into the calculation at all. Again, as mentioned by the preceding speaker, the important item of risks and casualties must not be lost sight of, and the various causes of fluctuations in returns must be adequately estimated.

Take, as an illustration, the following :—

Suppose an experienced manager on a particular railway had brought up the receipts of the line to a greater amount than a less experienced manager, who preceded him. This clearly did not alter the true value of the rateable hereditament, and whether the one farmer makes a profit by good farming, and the other, who muddles along on insufficient capital or from want of skill, shows a loss, the rateable value of the farm is unaltered. In the case of the railway, the

capabilities of the one manager, or the want of capability in the other, do not affect, or rather ought not to affect the question.

Illustrations might be multiplied; but the cardinal point to be kept in view was that, in the case of a public company, there was not only the return from the immoveable property, but also the profit of the business. What might be determined a proper allowance to be made by an experienced valuer or Surveyor, when he came to eliminate the trade profits, was a question on which he (Mr. PHILBRICK) would not presume to offer an opinion; having pointed out some considerations not to be lost sight of, their practical application must be left to the judgment and skill of the Surveyor.

Proceeding, therefore, on the parochial principle, to ascertain the total rateable value of the railway undertaking (excluding, of course, stations), on the lines indicated both by the introducer of the discussion and Mr. RYDE, before adverting to the great divergence of opinion between those gentlemen as to the mode of allocation or distribution of the net rateable value thus arrived at between the parishes, he would advert to one incidental remark made that evening. It had been said that there was no great general outcry on the part of the Railway Companies against the present state of the law; but he ventured to think that, if the total gross rateable value of any main line of railway in the whole of the parishes along the line, as ascertained on the principles above laid down, were allocated in proper proportions among the different parishes, any Railway Company that could be selected would, in the aggregate, pay a much greater sum for rates than at the present moment. He had no doubt that the Railway Companies were content, in some few particular parishes or unions, to suffer what they knew to be injustice, consoling themselves that, in the majority of

cases, they got off with a less share of local burthens than they ought to pay.

Taking as a principle that enunciated by Mr. HEDLEY, that the total net earnings of the railway were to be dealt with and distributed among the parishes in which they were earned, then all difficulty as to contributive value vanished.

Reference was made by Mr. CASTLE, Sen., to the doctrine of contributive value which he was the first to introduce into practice in rating, and it was obvious that in many places such an element had a real existence; but the difficulty lay in a uniform application of the doctrine, so that while on the one hand nothing really rateable escaped being properly charged, on the other, that the component parts, when united, should not exceed the entirety. Thus, in two parishes, if A were the richer and B the poorer, and A contributed to rateable value of B, it was clear that what was so added was done at the expense of A, and, however the question of contributive value was treated or the figures manipulated, the whole result would be fallacious, if more than the rateable value of A plus B were attained.

He had been glad to hear Mr. HEDLEY's disclaimer of dividing the net rateable value of an entire system among all the parishes according to a mileage rate; such a course must lead to great injustice. Rich urban parishes would be robbed for the benefit of poor country districts, and if the one was levelled up, the others would be levelled down to an average value irrespective of natural advantages and parochial earnings. He agreed with Mr. RYDE, that having ascertained the total net rateable value of the line, the sum so found ought to be divided in proportion to the earnings in each particular parish, or, in other words, one ought to proceed with each particular parish to ascertain its proper share of the total earnings in a somewhat similar manner to that in which these total earnings were themselves ascertained.

There was no difference in principle between the two processes, though the necessities of the problems involved working out the results somewhat differently.

By proceeding on the plan of apportioning the net rateable value of the whole undertaking among the parishes, all chance of injustice in the application of the doctrine of contributive value was obviated, and everything rateable was brought into the account—nothing rateable was omitted. This seemed to him the great merit of Mr. HEDLEY's plan. Under it if you got in parish A something added for contributive value, that amount was deducted from the residue left for division among other parishes, so that rating twice over for the same thing would be rendered impossible. Equally clearly, nothing could escape being charged—and these he understood to be Mr. HEDLEY's main objects in putting his proposition before the Institution,—thus ensuring that the whole of the rateable value of the railway should be allocated between the parties and the districts or parishes to be divided.

Time did not permit him to refer to several interesting questions of "terminals" raised in Mr. HEDLEY's further Paper; but it might be remarked that the author had in them endeavoured to prevent his views on the main subject being misunderstood, and very clearly repudiated the inference that he considered all parts of a line of railway of equal value and to be rated alike.

The conclusion he (Mr. PHILBRICK) came to was, that the proposal of rating the whole of a railway system by one operation, and proceeding afterwards to divide the net result among the parishes, would be a far more just and equitable system than the present, and would be a great improvement not only in theory but in practice; but in making the allocation, the principle of parochial earnings must be strictly adhered to, and local values considered as giving the

true rule, that any attempt to equalize or average the contributions to each parish, based on other considerations, would not only be attended with great inconvenience, but would be counter to the whole law of the country, and work signal injustice in many instances.

AT THE ORDINARY GENERAL MEETING,

Held on Monday, March 3rd, 1879.

THE PRESIDENT IN THE CHAIR.

The discussion on Mr. HEDLEY's Papers, on "The Rating of Railways," and on "Terminal Charges," was resumed by

Mr. J. W. DALE (Associate), who said the question before the Meeting was, according to the heading of Mr. HEDLEY's Paper, "The Rating of Railways, with Suggestions for the Amendment of the Law." If it were true, as had been contended, that the present law was not defective, then all suggestions for the amendment of the law must be superfluous. But is the law, as it exists, at present, adequate, and in all respects perfect? The question had been dilated upon by the highest authorities, and could it be said of any two of them that they were agreed at all points as to the true method of ascertaining the rateable value of a section of railway? But to pass from this general criticism, which was, perhaps, not the least telling part of his argument, he would proceed to particularize the points which induced him to advocate an amendment of the law. The main difficulty lay in determining the mode of ascertaining the net earning power, and its allocation; and, he believed, that assistance might be afforded to this end by judicious statutory enactment. It was a remarkable fact that,

although the conditions in assessing a railway were so complicated and so different from those to be considered in assessing agricultural lands, with the exception of the Railway Clauses Consolidation Act, no statutory assistance had been afforded, while the assistance intended to be given by the 107th Section of that Act had, by reason of the alteration in the subject matter contemplated by the Act, become wholly, or in a great part, inoperative. The circumstances contemplated by that Act had passed away, and to require a Railway Company to deliver accounts which should be of any assistance in the rating of a section of railway in a parish, was to ask what was impracticable.

With respect to contributive value, he must ask the same question which was asked by Mr. RYDE,—Was it true, as suggested by Mr. CASTLE, and fondly hoped for by Mr. TUCKETT and Mr. EVE, that contributive value was dead? He (Mr. DALE) thought not, and the whole tenor of this discussion, and especially the exhaustive speech of Mr. MEADOWS WHITE, had been to show a general consensus, that, at least, as a matter of principle, it was not dead. To argue in the affirmative was to say that with the help of learned counsel, skilled witnesses, experienced railway officials, a few note books, and, he might add, the hypothetical tenant, it was easy for a Company to prove to demonstration that almost any given section of railway was worked, and could only be worked, at a loss. Was this a satisfactory state of things? Although Mr. RYDE had said that his assessment of a railway at *nil* was upheld on appeal, was it consonant with judgment that the law, which permitted of such a result, required no amendment? Nay, further, Mr. RYDE had not told them whether or not the railway in question was rated, at least, at its agricultural

value. If it were so, he (Mr. DALE) apprehended it must have been with the assent of the Company, who were glad to escape on such easy terms, there being no law, so far as he was aware, compelling the Company to such assent. He thought it would be generally admitted that railway lands ought, in justice to the parishes, to be rated at least at a value equal to that of adjacent lands; and if the law made no provision of the kind, to this extent, at any rate, it must be acknowledged to be defective.

It had been, practically, admitted throughout the discussion that, in order to get at the rateable value of a part of a railway, it was necessary to get at the earning power of the part in question, taken in conjunction with its utility, and to consider it as part of a system of railways. To carry out that principle was no doubt a matter of extreme difficulty, but on that account alone it ought to be acceptable to the mind of a Surveyor. But that depended not simply upon reason and principle, but appeared to be concluded by authority. He took it that the judgment of Mr. Justice WIGHTMAN, in the West Middlesex Waterworks Case, must be taken as laying down the true law.

It was worthy of remark that Mr. RYDE, in his powerful speech, while stating (page 150) that contributive value was not dead, held that, so far as carrying out those principles in the rating of railways was concerned, contributive value was dead. Was it not somewhat inconsistent to admit a principle, and to refuse to apply it, and to say that the law required no amendment? Surely an admitted principle, if it be good law, ought to be applied, or negatived by statute.

It had been assumed that the rating of agricultural land was in no way influenced by the principle of contribu-

tive value. Was that the case? Take, for instance, an isolated piece of grass land in an arable district, or hill and moor land, where sheep could not be wintered but must be wintered on the low land. Was it not the fact that such lands fetched higher rents, and, therefore, higher rates, in view of the fact that they could be utilized with other lands?

But supporters of contributive value were not bound to maintain the analogy between agricultural and railway lands, for the whole circumstances were different. In the case of agricultural land, the earnings arose from processes begun, continued, and ended, substantially, on the same spot. The working expenses also arose locally, and were easily ascertainable.

In the case of a railway, the process from which the earnings arose commenced in one parish, and might be carried on through a hundred parishes before that earning was accomplished, while to get at the cost of labour was no easy matter, but involved a stupendous arithmetical process in each case. Though the nature of these cases was dissimilar, the principle was, as admitted, the same. What had to be got at was the net earning power, and therein arose that redoubtable spectre, the hypothetical tenant. When agricultural land was to be rated, in order to get at the net earning power, the easiest course was to ask how much a tenant would give for it. In the case of a railway the same rule was attempted to be applied, but the seeming absurdity of asking how much a tenant would give for it was avoided by asking how much a hypothetical tenant would give for it, the real question being the net earning power. But it would be objected that, in seeking to ask how much a hypothetical tenant would give for a part of a railway, it was unfairly assumed that a tenant was in pos-

session of a long line of railways wherewith to utilize it; but besides the fact, as he had before mentioned, that the cases of agricultural and railway lands were not analogous, was it not the fact that some of the present tenants of agricultural lands were somewhat hypothetical also? Was it not assumed that they come with a good balance at their banker's, a good supply of labour at hand, and was it not the experience of many present that such tenants were somewhat hypothetical? It had been given as an opinion that no parish comprising a section of main line would be likely to submit to contributive deduction, but the Legislature was strong enough to compel the submission of a parish to a just and equitable rule, as laid down by Mr. Justice WIGHTMAN, and referred to on page 84: "The Court must take into its consideration at once all the separate rates as so many claims upon one common fund, and must apportion that fund, bearing in mind that every addition to the rateable value assigned to one parish must be a subtraction from the rateable value which might be given to some other parish." He (Mr. DALE) had endeavoured to deal with that question as a matter of principle, and time did not permit him to criticise the particulars of the proposed methods for assessing the rateable value. It was stated by Mr. TUCKER (page 126), that it was unfair to be too hard upon Railway Companies with regard to published accounts put forward for a totally different purpose, and that if the directors did not make a sufficient allowance for maintenance, that was no reason for mulcting the innocent shareholders by an unjust assessment. The reply was, that the directors were, in fact, shareholders, and that the statements of the directors were, in fact, statements of the shareholders. Moreover, it had been shown by Mr. HEDLEY that the Companies were not

unmindful of putting the costs of improvements, as far as they could, to the current account, for if the costs of improvements be set aside as outlay of capital, the Companies would be entitled to no deduction whatever in respect of those moneys, but on the contrary, would be assessed higher in respect of that outlay; the same principle applying as in the case of a man who lays out capital in building on or in improving an acre of land, and who would be assessed higher in respect of such outlay. Before he sat down, he wished to make a suggestion which might possibly be worth some slight attention. The chief difficulty attending this question—a difficulty which must be felt by all—arose in great part from the insufficiency of reliable data. Such data, he maintained, ought to be, and could be, supplied by the Railway Companies. Section 107 of the Railway Clauses Consolidation Act, had, as he said, become inoperative, and although a railway could not fairly be asked to supply such accounts as would be sufficient to enable Surveyors to rate a section of railway in each parish, it would not be unreasonable to ask for such accounts as would enable them to rate a much larger section, containing a number of parishes. It appeared to him that the Railway Commissioners might divide the railway into convenient sections, and that of the traffic receipts and out payments a true account should be supplied by the railway in respect of those sections. The net and gross amount would vary, in view of any material change, year by year. The Commissioners would settle the fractional amount of the net rateable value to be apportioned to each parish coming within that section. That fractional amount would be settled upon a basis of an average for two or three years; but, having regard to the contingency of the variation of the traffic in the respective parishes, each parish should have the

power of applying to the Commissioners to vary that fractional amount.

Of course, each parish would levy its own rate per pound on its fractional proportion.

Supposing a section of a railway to run through ten parishes, and the net rateable amount payable in any one year on that section to be £100,000; that sum would be apportionable amongst the ten parishes, in fractional proportions.

Certainly, he was no advocate for unfairly increasing the assessment of a railway, and if for no other reason than because all additional expenses which are thrown on a railway must ultimately filter down, and be borne by the public who use them; but such a duty was originally intended to be thrown on the Companies, and he saw no reason why they should be relieved from it.

Mr. T. F. HEDLEY (Member), in replying to the discussion, said, that when he undertook to read a Paper before the Institution he had not the slightest idea that its consideration would occupy the attention of the Members for so long a time. The discussion had been so protracted, while the time at his disposal was so limited, that he could not hope to deal with the many points which had arisen with the fulness which he should otherwise have desired. He should therefore confine his attention to what he considered were misapprehensions as to the suggestions he had made in his Paper for the amendment of the law.

There were various details, which he should like to submit to the Members of the Institution (and he hoped to be able to do so shortly), in a tabular form, which would explain many points, upon which he would not now stop to dwell.

His suggestions for the amendment of the law had been much misunderstood. Both Mr. E. J. CASTLE and Mr. RYDE at once set out with the idea that he suggested the application to England of the law as it existed in Scotland, viz., an equal mileage distribution over the whole line, irrespective of the traffic. This notion was, he thought, completely dispelled by the illustration given in the supplementary Paper, to which he would shortly refer. At page 115, he set out an illustration in which the rateable value was put at £544,000, and for the sake of simplicity he would assume that the railway was 544 miles long. The average rateable value of the whole would therefore be £1,000 a mile. But it would be seen, on referring to his Paper, that where the traffic was equal to £1,000 a mile, the rateable value was put at only £270; where it was equal to £5,000 a mile, at £1,350; and where the traffic was equal to £10,000 a mile, at £2,700 per mile. The scale therefore was a graduated one, and the objection which Mr. RYDE raised to it, and illustrated by comparing the railway so rated with the rating of a mixed farm, did not apply.

Another error into which Mr. CASTLE had fallen was that he (Mr. HEDLEY) had assumed that all railways should be rated at 27 per cent. of the gross receipts. He could only say that there was no such assumption in his Paper, for the rateable value of the railway would be first ascertained, and if the traffic expenses were equal to 55 or 60 per cent. of the traffic receipts, the balance to be divided would be proportionately reduced, and if the working stock he had assumed as being equal to the traffic receipts was equal to 120 per cent. of the traffic receipts, the part allocated to the occupier's share would be proportionately increased; therefore it would happen that, instead of the rateable value being 27 per cent., it would not be more perhaps than

18 per cent. But no such fallacy was warranted by anything in his Paper, and he had not, as Mr. RYDE and Mr. CASTLE appeared to think, attempted to lay down a hard and fast line.

Again, an erroneous impression had crept in that he considered there should be a hard and fast line laid down of 5 per cent. interest and 10 per cent. tenant's profit, and no allowance made for depreciation. Again, he affirmed that there was no such principle advocated in his Paper. What he had said, was, that if the stock were kept up to its full working power, and no depreciation took place in it, there was no necessity to make a further allowance, because the depreciation had already been provided for by renewals paid out of revenue. He would call attention for a few minutes, by way of illustration, to the case of the London and North Western Railway Company, which was the case he had before him when he wrote the part of his Paper to which he was referring.

In the published accounts of the London and North Western Railway Company the capital expended for working stock amounted, on the 31st December, 1877, to £7,382,693. Now, if that capital were taken as the measure of value for the tenant's capital, and there was written off that amount, as there generally was in other cases, 10 or say 15 per cent. for depreciation of the stock, viz., £1,107,403, the present value, or the amount of tenant's capital, that the London and North Western Railway Company would be entitled to allowances upon would be £6,275,290; and they would be entitled to allowances of 5 per cent. interest, 10 per cent. for tenant's profit, and 2 per cent. for depreciation. That would bring up the allowance to 17 per cent. Now 17 per cent. on £6,275,290 would be £1,066,799. That was the amount

which the London and North Western Railway Company would be entitled to, on the principle contended for—by Mr. RYDE, he thought, amongst others. But take the facts as they existed and were proved to be by the Companies' officers at the adjourned Quarter Sessions, for the county of Bedford, held on 4th and 5th June, 1878. The values of the working stock as proved by the Companies' officers were as follows :—

	£	£
Locomotive stock . . .	5,058,964	
Machinery and tools . . .	573,000	
		5,631,964
Carriage stock . . .	1,493,767	
Machinery and tools . . .	37,298	
		1,531,065
Wagon stock . . .	2,519,269	
Fixed machinery . . .	38,069	
Tools . . .	20,336	
		2,577,674
Horses, carts, harness, &c., station furniture, telegraph implements, sheets, &c. . .		323,378
Total value of working stock . . .		10,064,081
Amount charged to capital for working stock up to the 31st December, 1877. . .		7,382,693

Now there had been taken from the receipts or profits of the Company during the last few years no less a sum than £2,681,388 for the improvement of their working stock, and surely, under these circumstances, any allowance for depreciation was unnecessary, for it had already been taken out of the revenue or profits of the Company. It was a very serious matter, he thought that the whole of this large sum—nearly three millions of money—should have escaped Imperial and

local taxation. If the London and North Western Railway Company were dealt with in rating as an ordinary Railway Company, that is, if the amount charged to capital, with a deduction for depreciation, were taken as the value of the working stock, the present value would be £6,275,290, and the allowances—viz., 5 per cent. interest, 10 per cent. profit, and 2 per cent. depreciation, = 17 per cent.—would be £1,066,799; but taking the working stock at the improved value, £10,064,081, and allowing 5 per cent. interest, and 10 per cent. profit, = 15 per cent.—thereon, these allowances would equal £1,509,612.

The latter figures, viz., £1,509,612, did not include the allowances for depreciation, which the Company themselves had proved had not taken place. The difference between £1,066,799 and £1,509,612, or £442,813, represented the allowances to the London and North Western Railway Company, over and above the usual allowances to other Companies. The public, of course, had no right to interfere with the allocation of the Companies' profits, whether they distribute them amongst their shareholders, or appropriate them to the improvement of the working stock; but the public had a right to know, and to fix all legitimate profit for purposes of Imperial and local taxation. Mr. RYDE sought to get rid of this difficulty by applying the $2\frac{1}{2}$ per cent. allowance, not to depreciation, but to risks and casualties. But what were the risks or casualties sought to be covered by this allowance? He need hardly say that 2 per cent. on the gross receipts of the London and North Western Railway Company was an enormous sum. What risks did they run? If, as the result of a collision, a large amount of life and property were destroyed, the Company got an allowance in respect of compensation for personal injuries, and loss or destruction of goods, and if the working

stock was damaged by the accident, the expenses of repairs were all charged to working expenses. He found that, in the course of a year, the London and North Western Railway Company had deducted, and had been allowed, on all their assessments, for compensation (personal and goods), £114,502. This sum, he had no doubt, honestly covered everything, for no Company was more particular than the London and North Western in charging revenue with all expenses that were incurred in the year. They were generally in such a financial position that there was no need to carry anything forward in the books, in the hope of a better year in the future. Mr. RYDE might urge there was the risk of fire, but during the same year the Company had charged no less than £20,715 for fire insurance. Surely, there was no need for a further fund, nor could he imagine any species of risk, beyond those he had mentioned.

He noticed that Mr. RYDE had dilated upon the advantages of taking rent as the basis of value; but he (Mr. RYDE) ignored rent altogether when he came to deal with railways. He could instance one case where a *bonâ fide* rental of £1,457 was paid for a line of railway, but Mr. RYDE made out the rateable value of that railway to be only £216.

Now Mr. RYDE had quoted in his speech (page 142) some observations of the Judges with reference to the continuous co-operation of parts of a railway, and stated that words which seemed to knock down his (Mr. HEDLEY's) argument were omitted from the quotation. But Mr. RYDE applied the words to the continuous parts of the line earning profits. As a matter of fact, the words had no bearing upon continuous co-operation conducing to profits, as would be seen on referring to the report of the case in question.

On page 154, an illustration of the valuation of an entire railway was given by Mr. RYDE. In this valuation he put the rateable value of the railway at £572,184. On the next page was a valuation of a railway in a parish. Mr. RYDE made out, in the latter case, that no tenant would take that railway unless the landlord would give him £704 a year for working it. The valuation on page 155 referred, he presumed, to a part of the railway the valuation of which, as a whole, was given on page 154. Would it be believed then that, while the rateable value of the whole railway was put by Mr. RYDE at something like 18 per cent., a part of that railway in a parish, the gross receipts on which were £4,312, could not be let to a tenant unless the landlord gave him £704 a year for working it? What would become of continuous co-operation in this case?

If he (Mr. HEDLEY) wanted a strong argument and illustration to prove the necessity for the amendment of the law, he could not do better than refer the Meeting to pages 154 and 155, containing these illustrations.

So strong was the necessity for an amendment of the law that Mr. Justice BLACKBURN and other judges of the superior Courts had gone further, and said that the Legislature ought to interfere and settle these matters. It must, he thought, be agreed that the vast and important property of Railway Companies should not be suffered to remain subject to all sorts of capricious decisions, often come to on very insufficient grounds; and Mr. RYDE had himself, in one of his pamphlets, pointed out the necessity for an amendment of the law, and had gone even further, asking for the appointment of another tribunal, and giving instances of rating atrocities of which he had himself been the victim. The observations made by Mr. DALE were very clear, pointed, and concise. He had shown good reasons why the

Legislature should interfere in this matter, had indicated what Parliament originally intended with regard to railway accounts, and had explained how it was that the intentions of Parliament had been frustrated by the development of the railway system.

To show how completely the railway system had outgrown the condition of things which the Legislature had in view when the Act of 1845 was framed, he would mention an instance within his own knowledge, where it cost the Company £300 to get out the earnings of the railway in a few parishes of one union. He thought it was unfair that any Railway Company should be put to such enormous expense to supply the data for making out an estimate of the rateable value in any one small section of their system, and this was, in his opinion, another proof that the law wanted amendment.

Independently of the principle he had submitted, of apportioning the percentages according to the traffic receipts, there was another principle which he had stated, and which Mr. RYDE had not, he thought, exactly given as he had put it in the Paper. His first principle dealt with the distribution of the rateable value by a percentage of the traffic receipts. Mr. RYDE had given this principle the second place, as if it were an after thought, occurring to him (Mr. HEDLEY) after hearing Mr. RYDE's objections.

His Paper, however, spoke for itself. Mr. WOOLLEY had referred to the other principle, and very correctly explained what he (Mr. HEDLEY) intended, namely, that the length of the railway—the double, single, treble, or quadruple lines, and all the sidings—should be reduced to a single length of line, and apportioned according to the lengths of lines in each parish. Now that was the only principle, apart from the Scotch one (which he thought very unjust), of getting rid of the neces-

sity of going to the books of the Company. He had given the matter much attention, and he hoped, in the details which he would submit to the Members of the Institution to consider at their leisure, that the illustration would enable them to form a more correct idea than any verbal explanation he could give at the present moment.

It was remarked by Mr. TUCKETT, at page 125, that he (Mr. HEDLEY) "had put the allowance for tenant's profits at 10 per cent.," but "he had not noticed in the Paper any deduction for interest. At page 114, he took the tenant's profit at 10 per cent., and allowed no interest. He thought it should be noticed by some one in this discussion that those were the lowest figures ever put forward." He feared, however, that Mr. TUCKETT had read that part of the Paper very superficially. If he took the trouble to look at the illustration to which he referred, he would find that the 10 per cent. tenant's profit was upon the gross receipts only, and that there was no tenant's capital to be provided by the hypothetical tenant. It was assumed that the line was worked under a working agreement, and that the contractor or Company engaging to work the line would find the stock and include in the contract the interest as well as the tenant's profit. It was a totally different principle from that of assuming the hypothetical tenant's profit on working stock in the way in which Mr. RYDE put it, and therefore there was no inconsistency between the two principles, for the one tenant took profit on the gross receipts, and the other on the tenant's capital.

At the last Meeting Mr. SQUAREY had characterized the allowances of 5 and 10 per cent. as extravagant. He did not agree with Mr. SQUAREY. He considered the allowance of 5 per cent. for interest as little as should be accorded, for 5 per cent. could be made of the money in other ways, and

looking at the fact that the turn-over of a Railway Company per year was only equal to the value of the working stock, he thought the allowance a reasonable one. He tested the reasonableness of this estimate in valuing a railway in the county of Hereford, and, instead of assuming that the tenant had so much stock to provide, and required so much interest and tenant's profit on it, he assumed that the tenant had to hire the working stock, and he allowed him 10 per cent. for hire, and estimated the tenant's profit at 10 per cent. on the net receipts, and 10 per cent. for the hire of the working stock was as low a rate as would cover the hire of engines, carriages, &c., for a year ; and as to tenant's profit, the Court had said in the case of canals, where no tenant's capital was required, that the profit must be estimated either on the net receipts or the gross receipts. In dealing with railways, if the profits were estimated at 10 per cent. of the net receipts, it was equivalent to allowing 5 per cent. on the gross receipts. He did not, therefore, agree with Mr. SQUAREY, that 5 per cent. and 10 per cent. were too much, or in case of depreciation in value, 2 per cent. or $2\frac{1}{2}$ per cent. on the value of the working stock.

There was one other point on which he would touch, namely, the deductions for stations separately assessed. Mr. RYDE had stated that he generally allowed 5 per cent. That might be a good rule in some instances, but it was not general. He (Mr. HEDLEY) had valued all the railways in the county of Glamorgan, and had found the value of the stations only 2 per cent. If on the Taff Railway 5 per cent. had been allowed as suggested by Mr. RYDE, the unions through which the line passed would have lost a very large amount of rateable value. In another case in the same county, the deduction for the stations did not exceed $2\frac{1}{2}$ per cent. of the gross receipts ; therefore, if 5 per cent. had been

deducted, the excess beyond the actual value would have escaped rating. In another case, still more recent (that of the Furness Railway Company), it was proved to the satisfaction of the Court that the value of the stations was only $1\frac{1}{2}$ per cent., therefore, an allowance of 5 per cent. would have been excessive.

A change had apparently come over Mr. CASTLE's mind, with respect to contributive value, and he seemed to be very glad now that he had got rid of his offspring contributive value. He (Mr. HEDLEY), however, did not think it was dead. There was no difficulty to his mind in arriving at what contributive value meant. The managers of any of the Railway Companies could say what the traffic of a railway was worth for them to work. If the traffic were good, they would put it at 40 or 50 per cent. upon the gross receipts. If moderate, they would take it at 50 or 55 per cent., and, if very small, it might, in some few cases, exceed 60 per cent. If a branch line were constructed as a feeder to the main line, and that branch could be worked at 40 or 50 or 60 per cent. of the traffic receipts, he submitted that that was the test of what the line was worth for contributive value to the main line, and that was the test by which it could be measured for the purpose of assessment. And this point was decided in the Irthlingborough Case.

There were other points to which he might have referred had time permitted. He could only conclude by expressing his thanks for the attention which his Paper had received at the hands of Members, and should be only too glad if any practical result arose from the discussion. One thing he felt certain of, namely, that there was no Member of the Institution who would not be willing to subordinate personal considerations to public advantages, if any such advan-

tages could be secured by an amendment of the law of rating.

THE PRESIDENT said that it now became his duty to make some observations by way of closing the debate which had extended over so many evenings.

He would not attempt to weary the Meeting by travelling over again the ground which had been already traversed in so much detail by the many able speakers, but he would endeavour as concisely as possible to extract some of the essence and marrow from this prolonged discussion.

Now it appeared to him that the main gist and scope of Mr. HEDLEY's valuable Papers was in the two amendments of the law which he had suggested, the first of which related to the principle of rating railways, and if he understood Mr. HEDLEY correctly, his suggestion was this, that the parochial principle should be abolished and that in lieu of it one of two methods should be adopted,—either some percentage (not an uniform one for all cases) of the gross earnings of the line in each parish, or a modified mileage principle (not the Scotch one, which was most unfair), in which all the lines, whether double, quadruple, or sidings, were to be reduced to the length of a single, and then rated at per mile.

Now there was no doubt that the effect of either of these suggestions would be to take something from the most productive parts of the line of railway and add it to the less productive parts, or, in other words, to legalize, by Act of Parliament, the principle of contributive value. Contributive value, as he understood it, meant this;—that an unproductive branch line should not be rated on its traffic *per*

se, but that something should be taken from the earnings of the main lines, which carried the passengers and the goods from the branch line to their destinations, and added to the traffic of the branch line for the purpose of arriving at its rateable value.

Now he was at a loss to understand on what principle one part of a railway—whether it be the least productive part of a main line, or an unproductive branch line—should be rated on a different principle from the most productive parts of a main line.

It had always seemed to him that contributive value was reciprocal, and that the main line contributed as much, if not more, to the branch line as the branch line did to the main line, for without the main line the branch line would never have been called into existence. He was quite ready to admit with Mr. HEDLEY that there were many cases in which the great Companies had committed themselves to the value of branch lines by agreeing to give a certain rental for them, and where that was the case there was no doubt a *bonâ-fide* rental, which it was difficult for the Assessment Committees to ignore in making their assessments.

He would now refer to Mr. HEDLEY's next suggestion for the amendment of the law, and he doubted from the tenor of the discussion whether it had been perfectly understood. This suggestion was that for the Assessment Committees another authority should be substituted—viz., an assessor to rate all the Railways in England.

He was quite willing to admit that the Assessment Committees did not always do their duty satisfactorily, perhaps in some cases owing to the fact that they did not avail themselves of the assistance of experts. He believed that a

large proportion of the railways in the country districts was rated without any valuation at all. The Assessment Committees simply put the lines down at so much a mile, and if the Companies were satisfied, well and good ; if not, they appealed. He did not think it probable that the Legislature would ever be induced to establish a special rating authority for one class of property only. He thought there was room for improvement as regarded the tribunals for trying appeals. Although the Chairmen of Quarter Sessions were generally very business-like men, they could hardly be supposed to enter into all the complicated calculations connected with railway valuations, and he could not help thinking that some appellate tribunal, such as the Railway Commissioners, or a Court composed as suggested by Mr. RYDE, would be a very great improvement on the present state of things.

Referring to the subject of terminal charges, he agreed with Mr. CASTLE, that these charges should be assessed on the parishes in which they were earned ; but, at the same time, he was not at all sure that the Courts came to a wrong or unwise decision in deciding that they should not be separated from the transit charges, but should be rated with them. These terminal charges were, in point of fact, earned entirely by the stations, and the stations were directed by the Courts to be separately rated. The rating of the stations formed a very considerable proportion of the rating of the entire railways if put at 4 or 5 per cent. on the gross earnings ; for if the stations were to be rated at 5 per cent. on the gross earnings, and the line on an average at, say, 20 per cent., the rating of the stations would be equal to one-fifth of the rating of the entire railway. If the terminal charges were rated in the parishes in which the

stations were situate, in addition to the value of the buildings, those parishes would get an advantage at the expense of the parishes in which there were no stations.

He would now refer for a moment to the question of the hypothetical tenant. A hope was expressed by Mr. SHIELD that by some amendment of the law, such as that suggested by Mr. HEDLEY, this mythical person might be got rid of; but so long as the value of all kinds of property was to be assessed upon its value to let, he was at a loss to understand how the hypothetical tenant was to be dispensed with in the case of property which was seldom or never let.

It had been observed by Mr. TUCKETT and by Mr. PHILBRICK, that there was a certain hardship in rating railways on the principle of calculating their rental value from their receipts and expenses—a principle which it had been stated was entirely different from that applied to other descriptions of property. There was this difference, however, between the two cases. The value of the latter could generally be ascertained by what was called the “higgling of the market,” an aid which was not available in the case of railways, and there was no other practical method, it seemed to him, of estimating the value of a railway than to calculate its rental value from its receipts, expenses, and tenant’s profits.

In conclusion, the general effect of this discussion on his mind was to convince him that there is no royal road to the rating of railways, and that whatever the tribunal or rating authority might be, railways were not likely to be correctly rated except with the assistance of experts who had made the matter their particular study. Should it, however, prove possible to devise legislation which would enable parishes and Assessment Committees to dispense with the

assistance of experts, he should be very sorry to believe that the Members of the Institution would, on that account, be found opposed to any real amendment of the law.

The Meeting then adjourned.

CONTRIBUTIVE VALUE.

By H. J. CASTLE, SEN. (MEMBER).

*Read at the Ordinary General Meeting of the INSTITUTION OF SURVEYORS,
March 17th, 1879.*

THE PRESIDENT IN THE CHAIR.

CONTRIBUTIVE value is a subject which materially affects both Parishes and Companies, and therefore it may be worth the while of the Institution to hear and discuss what can be said either for or against it.

The contributive value of any property is that which, over and above its own local value, may be said to be attached to it from its connection with other property outside.

Before going into the subject, it may, perhaps, be as well, in order to enable the question to be better understood, to mention, *seriatim*, the various cases which have come before the Court of Queen's Bench and have been decided, *now* in favour of contributive value, *now* against it.

The first was the "Amwell New River Case" (1 M. and S. 503)—*In favour*.

1844.—Next, the first Great Western Case, known as the first "Tilehurst Case," 15 L. J. (n. s.) (M. C.) 80—*Against*.

1854.—The "Newmarket Case" followed, 23 L. J. (M. C.) 76—*Against*.

1854.—And in the same year was decided the Dorking (South Eastern Railway) Case, 23 L. J. (M. C.) 85.—*In favour*.

1863.—Afterwards the Cannock Chase (London and
(18)

North Western Railway) was heard, 9 L. T. Rep. (n. s.) (Q. B.) 325.—*Also in favour.*

1866.—Next came the Haughley (Great Eastern Railway Company), where a method of applying the principle supposed to be laid down in the previous cases was submitted, 35 L. J. (M. C.) 229.—*Against.*

1869.—The “Llantrissant Case” (Great Western Railway Company) followed, 38 L. J. (M. C.) 93.—*Also against.*

1873.—And last (up to this time, 1878) came the Bedford (*North Western v. The Overseers of Goldington*), 43 L. J. (M. C.) 82.—*Once more in favour.*

The earliest instance of the recognition of this value was that of the Amwell Spring in Hertfordshire, when the Court of Queen’s Bench ruled, “that the earnings derived from the sale of the water obtained must be taken into account in estimating the values of this spring.” The New River Company were opposing the principle here.

In 1845, another case arose where a Company, the Great Western, contended for this value, seeking to reduce the assessment of their main line by maintaining that the profit made on the main line should go to supplement the losses on the branch. The Court of Queen’s Bench in their judgment admitted the principle of contributive value, but disagreed with the application of it sought for by the Company, and instanced the case of two farms, A and B, adjoining each other, where the rents of each separately would be 30s. per acre, but which in the case of one of them, by means of its connection with the other, would be increased in value 10s. per acre.

The next case was that of *Reg. v. Newmarket Railway Company*, where the majority of the Court, Mr. Justice COLERIDGE and Mr. Justice ERLE, ruled, Lord CAMPBELL dissenting, that the profits made upon the main line of the

Eastern Counties could not be reduced to meet the dividend they had engaged to pay to the Newmarket Company. The Eastern Counties admitted the contributive value to them of the Newmarket Line, which they had measured by a three per cent. guarantee; but as they now had to do with the branch (the Great Western, in the Tilehurst Case, had had to do with the main line), they took up a different view to that taken by the Great Western, and opposed the adoption to the branch of any contributive value at all. It is true they did not oppose it in so many words. They could scarcely do so, for they had really admitted it and measured it; but they pleaded that it was not an earning of the branch, nor money paid by way of rent for the use of the branch, but simply a payment “*to supplement the profits of working, should they fall short of a certain amount.*”

About the same time, another case arose, which was also referred to the Court of Queen’s Bench, viz., the Dorking Case—a case well known and constantly referred to whenever the question of contributive value has come before the Courts.

This case, from the fulness and clearness of the points which were submitted for the consideration of the Court of Queen’s Bench, deserves the fullest consideration. At the time, it was considered that this decision had clearly and definitely established the principle of contributive value, and that the only thing left was to show how it was to be measured.

The Court (with the exception of Mr. Justice ERLE, who dissented), consisting of Lord CAMPBELL, Mr. Justice COLERIDGE, and Mr. Justice CROMPTON, ruled, that the South Eastern Company were properly assessable in respect not only of the net profits derived from the traffic passing through Dorking, but also in respect of the rent paid, and the value of the Reading, Guildford, and Reigate line to

them as an integral part of their railway, and as increasing the traffic on their main line.

It may be remarked here that Mr. Justice ERLE, the only dissentient from this judgment, is merely maintaining the same opinion he had expressed in the Newmarket Case, where the Court (himself and Mr. COLERIDGE as a majority) strictly confined the Newmarket Branch to its own profits, and that Lord CAMPBELL, who was then a dissentient, is only maintaining his previous opinion also, but that Mr. Justice COLERIDGE seems to have changed his opinion upon the subject since the Newmarket Case, as he is now supporting the view of Lord CAMPBELL, whereas he differed from him in that case. The facts stated in this case were as follows:—The Reading, Guildford, and Reigate Line is a line running from Reigate on the South Eastern, joining the South Western at Guildford, and terminating at Reading on the Great Western. Under powers in their Act of incorporation, the Reading, Guildford, and Reigate Company leased their line for 1,000 years at a yearly rent of £41,000 to the South Eastern Company, who thenceforth became the sole occupiers of and carriers on the line. The Reading, Guildford, and Reigate Company were afterwards amalgamated with the South Eastern Company, who were bound, by the Act of Amalgamation, to pay the shareholders of the Reading, Guildford, and Reigate Company annuities equal to the rent of £41,000. The Reading, Guildford, and Reigate Line brought a great deal of additional traffic to the main line of the South Eastern Railway, and that Company thus derived benefit from the Reading, Guildford, and Reigate Line, as a feeder to their main line, in respect of traffic conveyed on that line. The Reading, Guildford, and Reigate Line, if in the market, might *be an object of competition*,* in consequence of the

* *Vide* the Bedford Case (page 246).

rivalry existing between the South Eastern and other Companies, the traffic on whose lines would be increased by the possession and control of it. Surely this is an analogous case to that of the London and North Western and Bedford and Cambridge Line in the Parish of Goddington. The annual gross earnings on the Reading, Guildford, and Reigate Line, less the proper deductions, fell short of £41,000. The South Eastern Company, being rated as occupiers of so much of the Reading, Guildford, and Reigate Line as passed through the Parish of Dorking, upon a valuation founded upon the said rent of £41,000, appealed against the rate. The points raised for the opinion of the Court were:—

1st. Whether the appellants were in the first rate properly assessed upon the rent agreed to be paid to the Reading, Guildford, and Reigate Company, and in the second rate upon the perpetual annuity.

The Court ruled *unanimously* that they were not properly so assessed.

2nd. Whether the appellants were liable to be assessed in respect only of the net profits derived from the traffic passing through Dorking, irrespective of any rent paid by the Company, and of the value of the Reading, Guildford, and Reigate Line, as increasing the traffic on the main line.

3rd. Or whether the respondents are entitled to take into consideration, in their assessment, the value of the line to the appellants, as an integral part of the South Eastern Railway, in addition to the net profit as derived from the traffic passing through the Parish of Dorking.

This decision, as previously stated, was that the Company were entitled to take into consideration the traffic the Reading, Guildford, and Reigate brought to their main line.

The decision as to the question of the existence of contributive value was not for some time disturbed. Con-

tributive value, as, for convenience sake, we will call that value which (over and above the value of the net profits of a branch) may be attached to a branch by reason of its connection with a main line, seemed by this decision to be fully recognized. Subsequent decisions, in fact, confirmed it.

It is true that it was considered by some persons that the Court, in recognizing the principle of contributive value, were "breaking in upon the parochial system, inasmuch as "it goes further than any other decision towards importing "into the rateable value profits not strictly referable to the "parish."

But this was certainly not Lord CAMPBELL's opinion, for he says in his judgment in the Newmarket Case :

"The railway *within* the respondents' parish is rendered "more valuable and productive by something connected "with the rise of it in another parish, and, according to "decided cases, its rateable value *within* the respondents' "parish is thereby enhanced *within* (not *outside*) the respondents' parish."

And, in conclusion, to prevent mistakes, he adds: "I "wish to adhere to the recent as well as the earlier cases "on this subject, with this caution, that when we were "determining that, in rating railways, the parochial not the "mileage principle was to be adopted, the Court did not "mean to intimate that the assessable value of land in one "parish ought not to be increased by a profit derived from "it by the occupier, as occupier, in consideration of an advantage derived from it in another parish."

Lord CAMPBELL evidently considered the contributive principle perfectly compatible with the parochial, when, in his judgment in the second Tilehurst Case, although affirming that the deductions must be parochial as well as the receipts, he says: "Of the outgoings of a railway some are "general, having no more connection with or influence on

“one part of the whole line than on any other—incurred
 “for the sake of the whole line, and contributing to the
 “profits elsewhere.” He distinctly recognizes this fact, that
 expenses incurred outside a parish may affect the share
 within the parish; in other words, as my friend Mr. FRANCIS
 GUISE says, “no class of expenses are properly to be
 regarded as *local*.” If this be so, surely, by parity of
 reasoning, the receipts for the conveyance of traffic over
 trunk line and branch together are not necessarily to be
 divided on a mileage principle, but, parochially, upon the
 respective portion of the entire fare that the Company may
 have adopted as between the trunk and the branch when
 they settled that entire fare, that division of the entire fare
 being necessarily based upon the *profits* that would be
 obtained out of it, as well upon the trunk as upon the
 branch.

In this year (1863) the question of contributive value
 was again raised in the Cannock Case, *London and North
 Western v. Overseers of Cannock*.

The Cannock Chase Line is a short railway, $7\frac{1}{4}$ miles
 long, branching off from Rugely on the London and North
 Western. It is purely a coal line.

The line from its opening was worked and repaired by
 the London and North Western, who held it under lease at
 a yearly rental, in perpetuity, of £5,500.

The case stated that the local working expenses were
 more than the local parochial receipts, and that therefore the
 line was worked at a local loss; but it also found that the
 line formed a link in the appellants' system of railways,
 which it was very desirable for the appellants to secure,
 from the traffic it would bring upon their other lines, and
 from the means it would offer of keeping out other Com-
 panies from the district. Passengers, minerals, and goods
 are conveyed over the Cannock Branch, also over the trunk

and other lines, at through rates and fares, the purely local traffic being comparatively *nil*. Consequently the Cannock Line contributed considerable additional traffic to the main line; *but the appellants were rated in respect of that in the different parishes where the profit upon it arose.*

The Cannock Line was worked as part of their general system. The question for the opinion of the Court was, the local expenses being greater than the local receipts, "should the line be rated at agricultural value, 40s. per acre, or upon something more, and if so, upon what principle?"—to be referred to an arbitrator to apply. The answer of the Court was: "It *has* a value above the 40s.;" but what that value is, and how it is to be arrived at, the Court leaves to the arbitrator, who "is to ascertain what, taking all its advantages into consideration, is the (rateable) value of the branch line in the respondents' parish to the appellants." The observations of the learned judges, in the course of the arguments by counsel, indicate very clearly the train of thought that was passing in their minds, and show unmistakeably that they all felt there *was* a value belonging to the branch from the additional traffic it would secure to the main line, and that that value could not really have been lost, because the branch line had been leased in perpetuity.

Mr. Justice BLACKBURN says: "What would be the elements of the rent,—amongst others, the capacity to add to the takings of the main line?"

Chief Justice COCKBURN says: "Rent is *primâ facie* evidence of value. *Suppose at this moment* there was no lease, and the appellants wanted to take it, what is the rent they would give? They would arrive at that by this process: "What is the traffic on the branch? what are the expenses? what are the profits it would produce to the main line? with some other considerations." In other words, What shall we lose on the working of the branch? what shall we

gain upon the main line, in working the traffic the branch will bring? and what rent can we afford to pay for the excess of the gain upon the main line over the loss upon the branch?

This decision fully confirmed the decision in the Dorking Case, in which the Queen's Bench ruled that contributive value *was* to be taken into account, but that it might not be correctly represented by the rent paid.

The leasing Company might have incorrectly calculated the profits they would derive from the traffic brought by the branch upon the main line, but they certainly enunciated that those profits ought to be taken into consideration.

Before proceeding, it may be here stated that the value of the profits obtained upon the main line, from traffic brought from the branch, would not be made to increase the value upon the branch, without diminishing the value of those profits upon the main line. The Court of Queen's Bench had previously, in the Great Western Case, ruled that the losses (or lower profits upon the branch) should not be applied to diminish the value upon the main line.

It is impossible to reconcile the two; the whole cannot be greater than the several parts taken together.

If the local value of the branch is to be increased contributively, owing to the profit made on the main line (according to the Cannock Chase and the Dorking Cases), then the profits made upon the main line would, of necessity, have to be diminished, *pro tanto*, by the increase of profits (derived from the main line) being given to the branches contributively to supplement the loss or lower profits upon the branch; and this the Court of Queen's Bench, in the Tilehurst Case, declared should not be done:—It is not for outsiders to seek to reconcile the conflicting decisions of the Court of Queen's Bench. Members of our profession are simply called upon to apply the law as it is laid down; whether it

is possible is no question for them (difficulties the Surveyor has nothing to do with)—*fiat justitia, ruat cælum*,—and therefore all that any Member of this Institution can do is to accept the recent decisions and to try and apply them.

By these decisions, up to 1863, it was clearly ruled that there was contributive value attached to one property by its being held in connection with another, and that as to a railway, over and above its value due to local earnings, there was an additional value due to its being a branch connected with a main line, though the two need not of necessity amount to the rent agreed to be paid by the main line Company, the inference being that contributive value was to be measured in each case by itself, and dealt with according to circumstances.

The next case was the Haughley Case, when a mode of measuring this contributive value (which, according to the Queen's Bench, in the Newmarket Case, and in the Dorking Case, was not to be taken at the amount of the Company's measure of its value before they came into possession) was fully brought before the Court, and upon the part of the parish sought to be established.

Before, however, giving the details of this case and the decision of the Court, it would be desirable to bring before the Meeting certain fixed principles of assessing railways that had from the beginning been contested and decided; and to understand this, it must be borne in mind that both railways and parishes contested in turn every point that would tell in their favour, that point not having been previously decided against them.

A parish, away from London, contended that the valuation should be made on the mileage principle; so also did the railway, if the parish was near London;—that is, the former, where the receipts at a distance were smaller,

wanted to get the benefit of the larger; and the latter, where the receipts at the London end were larger, sought to bring in the lower receipts at the further end to reduce the average.

The Queen's Bench ruled that the principle of a sought-for mileage division was incorrect. That the principle should be local receipts between station and station, as to which there could be no disturbing element, or what is understood to be the *parochial* principle; and the Queen's Bench have throughout adhered to this principle, though some of their decisions are scarcely compatible therewith.

The principle I contend for is that supposing a lessee, having to contract with the several parishes lying along a main line as different lessors of so much of the line as lay within their respective parishes, would take into account the net profits of the traffic he would derive in the several parishes, not the total gross receipts merely; in fact, that he would ascertain the mileage value of working between station and station, and apply that value to the several parishes entitled to it. This value, depending not only upon the number of passengers carried, but upon what he could afford to carry them for in the several station districts, the profit to be made out of any one passenger (and therefore out of all) depending upon the number of passengers, among whom (varying with each district) certain fixed expenses (not so varying) would have to be divided.

This is the principle I contend for, stated generally; but I have never yet had an opportunity of bringing this principle fully and clearly before the Court.

The cases submitted never really represented the point contended for. In the statement of a case, a Surveyor's views, whatever they may be, have to pass through two hands—solicitors' and counsel'—before they come before the

Court; and generally, when they do come, they are so *improved*, but so changed, that they are seldom what the Surveyor means. This was so in the Haughley Case.

Before going into this case, it would be as well to clear up some misapprehension that seems to have prevailed upon the subject in the mind of the public. There were *two* Haughley Cases, one was referred to the present Baron CLEASBY, who sat as Arbitrator, and stated a case for the Court of Queen's Bench where the question of contributive value was distinctly set up, and the other which was heard before Mr. WORLLEDGE (County Court Judge of Ipswich), sitting as the Court of Quarter Sessions by desire of the members of the Court. In the case heard before Mr. WORLLEDGE the question of contributive value was not raised, from the feeling on both sides, that it had been set at rest for ever by the decision of the Queen's Bench *against* it in the former case.

The Haughley Case, that is so constantly quoted as a precedent for percentages, allowances, &c., in the belief that those allowances and percentages were sanctioned by the Queen's Bench, is a distinct case, simply a Quarter Sessions case, that decides and settles nothing, though it has been often sought to give to the allowances, &c., therein stated all the weight and importance that would belong to a decision of the Queen's Bench. This was heard before Mr. WORLLEDGE. The case heard before Baron CLEASBY, which went up to the Queen's Bench, seems to have settled one thing if it did nothing else—the fate of contributive value. In fact, the whole question was so fully gone into, and, generally, the facts and points were stated so fairly in the case, that a decision so deliberately come to therefrom as that was, must be accepted as final, although it was in direct antagonism to the decisions given in the Amwell, Newmarket, Dorking, and Channock Chase Cases, especially

as the decision went not only to the *principle* of contributive value, which it was considered those cases had clearly established, but had positively rejected the only mode in which, upon a railway, such a principle could, in the opinion of the writer, be possibly measured.

In the Cannock Chase Case an attempt was made, on the part of the appellants, to reverse the judges' decision in the Dorking Case. In this case it was stated that the Cannock Line was worked at a loss, and the appellants contended that as the line yielded no *profit*, it ought only to be rated at its agricultural value. The Court, consisting of Chief Justice COCKBURN, Mr. Justice BLACKBURN, and Mr. Justice WIGHTMAN, confirmed fully the decision in the Dorking Case, Chief Justice COCKBURN declaring the process that the tenant would necessarily go through to get at the proper rent, viz.—He would, the Chief Justice said, ascertain “ what the traffic on the branch was and what the expenses. According to the case there would be a loss. “ This he would put on one side of the account. He would “ then ascertain the profits it would produce to the main “ line, that is, the traffic receipts it would bring, and the “ increased expenses occasioned by that traffic and the excess “ of the former over the latter. These net profits he would “ put on the other side of the account. *The excess of this “ gain over the loss upon the branch would form the basis upon “ which he would arrive at the rent he would give.*”

In confirmation of this, what, also, does Mr. Justice BLACKBURN say?—“ What would be the elements of the “ rent? Why, amongst others, the capacity to add to the “ takings of the main line.” And, again, Mr. Justice WIGHTMAN—“ The branch is worked at a loss if it brings “ no profits to their main line; why do they keep it open?” *The case was sent back to the Arbitrators to ascertain what, taking all its advantages into consideration, is the rateable*

value of the branch line in the respondents' parish to the appellants.

Before proceeding further, it would be desirable to pause here and consider how the case stands. Decisions have been given against contributive value, and have been given in favour; the last two, apparently, so conclusive as to the existence of contributive value, that it was only left to the Surveyors to exercise their ingenuity and try and find out how it was to be done. And in the next case—the Haughley Case—not so much the principle (which was considered to be settled) but the mode of measuring it was submitted to the Court.

THE COURT OF QUEEN'S BENCH.

Great Eastern v. Haughley.

The head-notes in the report of the case by *The Law Journal* of the 30th May, 1866, are as follows:—

“The rateable value of a portion of a railway, consisting of the net annual profits from the traffic upon the portion rated, cannot be increased by any part of the profits earned by the same traffic upon other portions of the line. Therefore, the expenses of traffic over one portion of a line cannot be estimated according to a mileage proportion, formed by taking into account the increased profit and relative decrease in the cost of conveying the same traffic, with a large accession to it, upon other parts of the line.”

There is another point submitted to the Court, viz., as to fund for renewing the rolling stock, which, as it does not bear in any way upon the question of contributive value, has been omitted.

As the head-note scarcely explains the real contention of the respondents, it has been thought desirable to lay before the Meeting the actual words given in the case:—

“The respondents contend that there is an additional
 “portion of the profits, beyond those actually earned in
 “Haughley, properly attributable to the occupation in
 “Haughley, and, therefore, to be taken into account in
 “ascertaining the rateable value. They contend that, in
 “respect to that portion of the traffic which passes not only
 “over the line in Haughley, but also other portions of the
 “line, there should be a participation in all the profits
 “earned, and therefore that, inasmuch as the same traffic is
 “carried at a much greater profit over other portions of the
 “line where the traffic is greater than over Haughley, each
 “part of the line may be regarded as contributing to earn
 “those additional profits. And the amount of contribution
 “which the respondents insist upon is found by the mileage
 “in Haughley; as they contend that, in respect of the same
 “traffic passing over any portions of the line, each mile over
 “which it passes must be considered as participating equally
 “in the profits earned by that traffic, or, in other words, as
 “earning a proportionate part of them. If they are right
 “in so contending, as hereinbefore mentioned, for the par-
 “ticipation, according to mileage, of all profits in respect of
 “the same traffic—and the fact that the whole line is
 “worked as one concern is sufficient to establish that propo-
 “sition,—then I find as a fact that, independently of the
 “profits derived from the actual profits in Haughley, there
 “is a further profit which, upon the aforesaid mileage prin-
 “ciple would, to the extent of £75, be applicable to Haugh-
 “ley. If the respondents are not right in so contending,
 “then I find as a fact that there are no profits attributable
 “to the occupation in Haughley beyond those derived from
 “the actual earnings there.

“The Court, in spite of all they had previously ruled,
 “decided that the proposition submitted to them by Mr.
 “(Baron) CLEASBY was not true. It will be unnecessary to

“ give the wording of the adverse decisions of the several
 “ judges, as, in the following observations, which represent
 “ the views of the respondents, they will be fully referred
 “ to and stated. The respondents would say, in justification
 “ of the proposition thus ruled to be untrue.”

Does it not follow that,—the law being settled ; viz., that a branch over and above its own profits (if any) might have a value from the profits of the traffic it brought to the main line,—the Parish of Haughley was justified in considering that all it had to do was to carry out the process commended by Lord Justice BLACKBURN, and directed to be done by the Arbitrator in the Cannock Chase Case—viz., to find out how far the profits made on the main line would exceed the loss on the branch from the traffic that passed over both? For it was evident that if a line of Railway consists of main line and branch, and that if the branch is worked at a loss, the parochial receipts being calculated for all the traffic that passes over the main line and branch at a *mileage* division throughout, and that if the traffic that the branch brings produces a greater profit upon the main line than there has been loss incurred upon the branch, that, according to the law as laid down in the two cases above-mentioned, the branch would still have a value in spite of the loss ; and it equally follows, that if the traffic receipts are apportioned to branch and main line according to a mileage division, that the receipts upon the branch, *plus* the receipts upon the main line, must together equal the whole receipts of the Company, and, consequently, that, if there be a value on the branch, that value can only be obtained out of the *receipts* upon the main line or from allocating a lower scale of expenses to the branch than, if worked by itself, it would incur. *If so*, then it follows either that, firstly, the mileage division of the receipts as

now adopted is incorrect, or, secondly, the mode of allocating the expenses—one or the other must follow.

What the respondents in the Haughley Case would have liked to have said was, the first is wrong, the receipts of the traffic passing over the parish should not be arrived at by mileage division throughout; but as they had not sufficient means at their command to ascertain what the parish receipts should be when divided according to the principle they wished to contend for, they were forced to fall back upon the second—viz., that of the allocation of expenses. It must never be lost sight of that the tenant would, as regards the whole railway, make not the gross receipts the basis of his estimate of rent he could give, but the gross profits; and if he would do that with the whole, supposing he had to give a rent for different portions belonging, say, to different persons, he would make the respective profits upon the several portions the basis of the rent. The respondents would do so too. They say the parochial receipts should not be started with; but the parochial earnings, or excess of receipts over expenses. The parochial receipts are arrived at in this way: the yearly receipts taken between every station on the one side of the parish and every station on the other side of the parish are divided by the respective distances between the station, and an equal mileage proportion given to the parish. This mode of sub-division applied throughout would of necessity absorb all the receipts. The expenses incurred in earning those receipts are allocated some according to train miles run, some according to receipts; but, whether by one mode or the other, when so allocated over the whole, the whole expenses will have been absorbed. If, therefore, upon a branch, the allocated receipts are found to be only equal to or even less than the allocated expenses, and if that branch, from its bringing

a large amount of traffic upon the main line, as the Courts have ruled it, may have a value over and above its own profits from its connection with the main line, then it necessarily follows that, if the receipts apportioned to the line are not to be reduced, the value must be obtained by reducing the allocated expenses upon the branch, and, consequently, increasing those on the main line, and thereby diminishing the profits upon the main line.

The parish receipts are the aggregate mileage proportion of all the year's traffic that passes over the parish. This traffic is the aggregate of several single fares from individual passengers who are conveyed at different rates of expenses at different parts of the journey. The fare charged for him is one entire fare ; the mileage expense of carrying him varies with the district through which he passes. The Company say, as regards the passenger, and therefore as regards all or as regards the whole receipts, divide the fare equally per mile throughout, and then allocate the expenses, not according to what they really are per passenger, in the several districts, but on another principle of allocation, train mileage, or otherwise. The respondents say, and that was their intended contention before the Court of Queen's Bench, ascertain first what are the different district expenses belonging to the passenger, and if to him, then to any number of passengers chargeable against the entire, and then apportion the difference between receipts and expenses according to a mileage division. How far this contention of theirs was fairly and fully brought before the Court in the decision given in the Haughley Case, the reader must judge for himself. The respondents intended to lay down a general proposition upon which they wanted the Court's opinion.

They say, or they would have said, if they could have said what they would, we admit, as between a main line

and a branch, it is not the rent actually agreed to be given for the branch, while the branch is independent, but what the branch should turn out to be worth afterwards, when it becomes a portion, part and parcel of the main line ; and we go further : we say that if a branch contributes to the working of the main line, so equally does the distant end of the main line to the other end, and that there is no difference contributively between the one and the other ; that if the distant non-paying end contributes to the profit upon the London end, so also does the London end reciprocate the benefit and contribute to the other. And this being so, they, the respondents, say, this state of action and reaction throughout, and all the reciprocal advantages that result therefrom, are all provided for by the principle they contend for as the proper principle, to be applied anywhere in arriving at the rateable value of any portion of a railway ; in short, they say, *do not start with a mileage division of the full fare, but with a mileage division of the net profit of the full fare.*

It is somewhat curious that the analogous case of the four-horse stage-coach, which Chief Justice COCKBURN refers to, is the very case the respondents rely on as confirmatory of their views. His Lordship says : “ Take a stage-coach from Norwich to London : the expense of running it from Norwich to London was so much per mile, with little or no variation throughout the journey, sometimes it only carried five passengers, sometimes fifteen ; if it carried five it worked at a loss, and if it carried fifteen it worked at a profit, and so it is with a railway.” And so say the respondents, but they say more, they say this—assume stage-coaches are horsed for different stages by different persons. Take four stages of equal lengths, each stage horsed by different persons. In the first stage all the expenses of horsing the five persons are chargeable against them only, and there is no profit ; when these five persons are

carried with ten others on the fourth stage, and the expenses of horsing are divided between fifteen, these five passengers pay. Upon what is the entire fare of each of the five passengers calculated, over four stages? Surely upon this each will cost per mile, in the first stage, say $\frac{a}{1}$, in the second stage $\frac{a}{2}$, in the third stage $\frac{a}{3}$, in the fourth stage $\frac{a}{4}$; then assuming the stages to be equal, say ten miles, the expenses throughout, per passenger, will be $10a + \frac{1}{2}0a + \frac{1}{3}0a + \frac{1}{4}0a = \frac{25}{12}0a$. This would be the basis of their estimate of what the fare should be; the profit say of $\frac{1}{12}0a$ would be added, giving together $\frac{3}{12}0a$, or $30a$ for the entire fare.

The respondents, in effect, say: his Lordship has not followed out the case. The question is not whether a loss is not incurred in the first stage, and a gain made in the last out of the same passengers, but whether, supposing the first stage to be in the hands of A, or supposing it to be unoccupied, would it not be worth while for the parties who had the last stage, to share the entire profits of the five passengers with A, or to horse them themselves at a loss through A if they could carry them on to the first stage, and so divide the fixed expenses of horsing that stage between fifteen passengers instead of ten? And respondents contend that the parties who had the last stage would, either in giving a rent or undertaking to horse themselves, look at the whole fare and the whole expense, and not at what the fare and the expense was in the first stage; and the respondents say, with his Lordship, that, as with the stage so with the railway. The stages of coach travelling correspond with the station districts. As passengers are conveyed, per passenger, more cheaply in the one, so are they conveyed more cheaply in the other, according to the number of passengers, among whom the fixed expenses and allowances are to be divided. But they, in the case of railways, go further

than his Lordship, and say, the value of the first or distant traffic of a railway is not only what it clears within its own district, but upon the number of districts it passes through *afterwards* in its upward journey, and upon the number *before* in its downward journey, and upon the several rates of district profits to be obtained out of each passenger. The respondents agree with his Lordship as to the facts, but not as to his inferences. They say, if it was thought the distant end would not pay, why make it? if it is found not to pay, why work it? and if it is made, and if it continues to be worked, then it is simply because experience has satisfied the Company that the possession of the line brings them traffic which, taking the year throughout and the expenses per passenger throughout, is worked at a profit.

In conclusion, it must be distinctly stated that, in the opinion of the respondents, this contention on their part in the Haughley Case was strictly in conformity with the decisions in the Dorking and Cannock Chase Cases. There was no seeking to withdraw profits legitimately earned in one parish to add them to another, but to show that the question for the imaginary tenant would in all cases be net profits of a traffic, not gross receipts; that, as between one part of a railway and another, the proper principle of division would be net profits of traffic, not gross receipts; and that, as regards all traffic between station and station, *the net profits*, and not the gross receipts, *should be divisible among all the parishes over which that traffic passed, in proportion to the mileage.*

It will be found almost impossible to understand the case thoroughly, and to follow clearly the views of the respondents, except it be given in full.

“ The appellants are the Great Eastern Railway Company; their line runs through the parish of Haughley, in “ the county of Suffolk, with two branches, one leading to

“ Bury and the other leading to Norwich. There is a station
 “ in the parish of Haughley, and there are together 1 mile
 “ 6 chains of railway in the parish.

“ The gross yearly earnings on the railway in the
 “ parish of Haughley are £2,660. The principal traffic is
 “ that passing over the railway, in Haughley, from Bury, in
 “ the direction towards London and back; and from Nor-
 “ wich, in the same direction, and back; and there is also
 “ considerable traffic passing over the railway from Bury
 “ to Norwich and back; the mere local traffic, namely, that
 “ originating or ending at Haughley, is very small.”

In addition to the above, the arbitrator says:—

“ I also find the following deductions from the gross
 “ receipts to be properly made in ascertaining the rateable
 “ value: fund for renewal of way, £236; fund for depre-
 “ ciation of rolling stock, £76; risks and casualties, £20;
 “ interest and tenants’ profits, 15 (*b*) per cent. on capital
 “ employed in the rolling stock and stores, £400. These
 “ sums added together amount to £732; and supposing
 “ that the line in Haughley is properly rateable only in
 “ respect of the earnings of Haughley, the figures in this
 “ and the preceding paragraph give the rateable value of
 “ the line in Haughley about £388; in that case the blank
 “ left for rates and taxes would be filled up, £77. And I
 “ find the rateable value of the stations in Haughley would
 “ be £498. The above figures show the value of the
 “ occupation of railway derived from the actual earnings in
 “ the parish of Haughley, and that portion of the line in
 “ the parish of Haughley. The expenses and deductions
 “ depend to some extent upon the amount of traffic or
 “ earning, as, for instance, the item for miscellaneous
 “ expenses, which is arrived at by dividing the whole
 “ amount of miscellaneous expenses in proportion to the
 “ earnings upon each part of the line. They also depend

“ to some extent upon the distance run by the engines, and
 “ would be the same whether there was one carriage
 “ attached or several, and whether the carriages were
 “ empty or full. And I have been desired to state, for the
 “ opinion of the Court, the following question, as to the
 “ occupation in Haughley being increased in value by a
 “ participation in some portion of the profits earned (*a*) on
 “ other parts of the line.”

“ The respondents contend that there is an additional
 “ portion of the profits beyond those actually earned in
 “ Haughley, properly attributable to the occupation in
 “ Haughley, and therefore to be taken into account in
 “ ascertaining the rateable value; they contend that, in
 “ respect to that portion of the traffic which passes not
 “ only over the line in Haughley, but also over other
 “ portions of the line, there should be a *participation in all*
 “ *profits earned*, and therefore that, inasmuch as the same
 “ traffic is carried at a much greater profit over other por-
 “ tions of the line where the traffic is greater than over
 “ Haughley, each part of the line may be regarded as
 “ contributing to earn those additional profits. And the
 “ amount of contribution which the respondents insist upon
 “ is found by the mileage in Haughley, as they contend
 “ that, *in respect of the same traffic passing over any portion*
 “ *of the line, each mile over which it passes must be considered*
 “ *as participating equally in the profits earned by that traffic,*
 “ *or, in other words, as earning a proportionate part of them.*
 “ If they are right in so contending, as hereinbefore mentioned,
 “ for the participation according to mileage of all profits in
 “ respect of the same traffic, and if the fact that *the whole*
 “ *line is worked as one concern* is sufficient to establish that
 “ proposition, then I find as a fact that, independently of
 “ the profits derived from the actual profits in Haughley,
 “ there is a further profit which, upon the aforesaid mileage

“ principle, would, to the extent of £75, be applicable to
 “ Haughley. If the respondents are not right in so con-
 “ tending, then I find as a fact that there are no profits
 “ attributable to the occupation in Haughley beyond those
 “ derived from the actual earnings there. The question
 “ for the opinion of the Court is at what sum the Great
 “ Eastern Railway Company ought to be rated in Haughley.
 “ I reserve the question of costs until the decision of the
 “ question by the Court of Queen’s Bench.”

The case having been referred back to the arbitrators to raise any question of law that either party might think fit, Mr. CLEASBY further certified and reported as follows:—
 “ I have already raised upon the case the only question of
 “ law that I was, according to my understanding of what
 “ took place, called upon to raise. I was requested to raise,
 “ as a matter of law, the question of what was called ‘ con-
 “ tributive value,’ that is to say, of some additional value
 “ beyond the immediate value of the occupation in
 “ Haughley as well as other parts of the line, each
 “ mile of the railway over which that traffic passed must be
 “ regarded as contributing equally to the earnings of the
 “ profits derived from that traffic; in other words, that if
 “ the same traffic is carried at a much greater profit over
 “ one part of the line than over another, still *each part*
 “ *of the line must be considered as equally earning the profit.*”
 Being struck with the generality of this proposition and the apparent difficulty of sustaining it, “ I took care to have
 “ it distinctly understood that this part of the claim made
 “ by the respondents was founded entirely upon the correct-
 “ ness of that proposition, and that, if that proposition were
 “ not sustained, that part of the respondents’ claim failed.
 “ If that proposition be correct there can be no other ques-
 “ tion of law, the figures arrived at being merely a result
 “ of the calculation of the profits. In obedience to the

“ rule of Court, and at the request of the parties I make
 “ an addition to the case as follows :—I have been requested
 “ by the appellants to state upon what principle certain
 “ figures in the expenses and deductions have been arrived
 “ at. *The item for locomotive expenses, £468, has been*
 “ *arrived at by taking the locomotive expenses on the whole*
 “ *Great Eastern system and then giving to Haughley the same*
 “ *proportion as the number of train miles run over the whole*
 “ *system.* The item for carriages and waggons, £115, was
 “ arrived at in a similar manner, the difference being that
 “ the number of carriages and waggons in each train must
 “ be taken into account. The item for miscellaneous
 “ expenses, £478, was agreed to on both sides, and was
 “ arrived at by taking the gross amount of miscellaneous
 “ expenses applicable to the whole system and then taking
 “ that proportion which the gross receipts in Haughley
 “ bore to the gross receipts over the whole line. Both
 “ parties agreed that this was the proper mode of appor-
 “ tioning these expenses. The gross traffic in Haughley,
 “ £2,660, is arrived at by taking that part of the receipts
 “ which arises from traffic not entirely local on the mileage
 “ principle ; for example, if *the whole fare of a passenger is*
 “ *a certain sum, a proportionate part of this sum is attributed*
 “ *to Haughley, according to the number of miles in Haughley.*”

Chief Justice COCKBURN, in judgment, said :—

“ Two questions have arisen in this case. First, whether
 “ in assessing Haughley for rating purposes, the traffic
 “ *beyond* it ought to be taken into account, in order that the
 “ expenditure within the parish may be reduced ; for the
 “ more we reduce the expenditure, the greater is the profit
 “ of the line rated, and the greater, of course, is its value.
 “ After some attention to the case, it seems to me that the
 “ decision of the arbitrator, Mr. CLEASBY, was right. There
 “ is a through traffic from London to Norwich, and, beyond

“ Haughley, on the road to London, there is a large accession
 “ to this traffic. Now, it is said by Mr. FIELD, that the
 “ effect of this additional traffic is to reduce the expenditure
 “ with respect to each individual traveller; so that, supposing
 “ him to have started from Norwich, the expense of his
 “ carriage through the parish of Haughley must be lessened
 “ by taking into account the diminished expense of convey-
 “ ing him upon other parts of the line on the way to London.
 “ But I do not think that the expenses of the line to be
 “ rated ought to be calculated with reference to the cost of
 “ conveying passengers. The working expenses of the
 “ whole of the traffic between Norwich and London ought
 “ to be ascertained, and a proportionate part of these
 “ expenses must then be apportioned to the traffic in
 “ Haughley. The cost of carrying a passenger may vary
 “ upon different parts of the line; but the working expenses
 “ may still be after a uniform rate. This may be illustrated
 “ by the case of the old stage-coaches. The expense of
 “ running a stage-coach between Norwich and London was
 “ so much per mile, with hardly any variation. Sometimes
 “ there were five passengers, sometimes there were fifteen.
 “ If there were five passengers, the coach ran at a loss; if
 “ there were fifteen, the journey was a profitable one. So
 “ also with this railway, when it is being worked from
 “ Norwich to Haughley, the profit is likely to be less than
 “ when it is being worked along those parts of the line
 “ beyond Haughley, where there is received a large
 “ addition to the passengers and traffic, so that the rest of
 “ the journey is lucrative and profitable. There is also this
 “ fallacy in Mr. FIELD’s argument—for according to him
 “ the working expenses of the line rated are to be got at by
 “ taking into account the profits of the additional traffic
 “ beyond Haughley, and not the mere working expenses of
 “ this traffic. These profits, whether by accident or not,

“ are acquired without and beyond the parish of Haughley;
 “ and they cannot be rated as belonging to that parish.
 “ The first question must, therefore, I think, be decided in
 “ favour of the appellants.

“ The other question is, whether, in making deductions
 “ in respect of the repairs and renovation of the railway
 “ stock, the arbitrator was right in dealing with the case
 “ upon the supposition that the hypothetical tenant would
 “ make his calculations as to the amount of rent, under the
 “ assurance that the stock would be replaced at the end of
 “ what may be called its natural life; or, whether these
 “ deductions are to be made by finding the difference in the
 “ value of the stock at the beginning and end of the year of
 “ tenancy. Mr. COLERIDGE strongly urged upon us that we
 “ should be departing from the words of the statute if we
 “ held that the arbitrator was right in his view that the
 “ deductions in respect of repairs ought to be spread over
 “ the whole period of the natural life of the stock. But it
 “ is one thing to start with the assumption that you are
 “ dealing with a tenancy from year to year, and another to
 “ say that the circumstances are such that the hypothetical
 “ tenant, in considering what rent he shall pay, is bound to
 “ assume that his tenancy will not last beyond a year. It
 “ is undoubtedly a tenancy from year to year, but it is a
 “ tenancy of such character that the tenant may well think
 “ it worth his while to deal with the rolling stock as though
 “ he were sure that his tenancy will not be broken up at
 “ the end of the year; and if it were shown that in a large
 “ number of yearly tenancies the tenant does deal with his
 “ stock in this manner, this fact ought to be considered in
 “ valuing the rent payable under a yearly tenancy of this
 “ railway. At all events, the question, whether the tenant
 “ would make his deductions upon one principle or the
 “ other, is a matter of fact which must be decided by an

“ arbitrator or at Sessions, as the case may be. Now I
 “ think that there is nothing in the Parochial Assessment
 “ Act which requires us to say how the arbitrator ought to
 “ have decided upon a question of fact, and whether he has
 “ decided rightly or wrongly. He must find out the cir-
 “ cumstances which are likely to exercise an influence upon
 “ the person to whom a railway is let from year to year,
 “ and how much rent he might fairly be expected to give.
 “ When he has come to a conclusion, it is not our province
 “ to disturb it, or even to pass an opinion upon the reason
 “ which has guided him. This question must therefore be
 “ decided in favour of the respondents.” There are other
 cases, quoted after this, which still seem to support the
 principle, but none in which this recognized principle has
 been attempted to be measured.

The principle of measurement contended for before
 Mr. Baron CLEASBY was that, given a mileage division of the
 fare throughout, the expenses and allowances should be
 allocated in each station district according to the traffic to
 which those allowances and expenses belonged. The receipts
 might and would vary considerably in the several station
 districts, while there would be certain allocated expenses
 which would be the same in several districts. And it is a
 curious thing that the very reasons which Chief Justice
 COCKBURN adduces for questioning the correctness of this
 principle of measurement is one that seems most con-
 clusively to establish it. He says “ that the cost of
 “ carrying a passenger may vary upon different parts
 “ of the line, but the working expenses may still be
 “ after a uniform rate.” We say again that it is the very
 fact of the working expenses being after a uniform rate,
 and the charge for carrying (the aggregate station receipts)
 varying upon different parts of the line, that furnishes us
 with the only true method of measuring contributive value.

Chief Justice COCKBURN, saying, further on, that Mr. FIELD is in error when he contends that the working expenses to be rated are to be got at by taking into account the additional traffic beyond Haughley, has evidently misunderstood the argument of Mr. (now Justice) FIELD, who was speaking for the respondents. Nothing of the sort is really said. A Railway Company, in fixing its fares, takes the profit of the *whole* journey into account as one of the matters to be considered. There are other points, of course,—there is the question of probable competition, and others, perhaps; but this is practically the only one—What profit can we make *out of a passenger between say London and York?*

Whether a larger or a smaller number of passengers have to be carried, a train sufficiently large to carry the greatest number will have to be put on; the expenses of running that train will be virtually the same, whether the number be a large or a small number. It may cost, per passenger, $\frac{1}{16}$ of a penny per mile near London; it will cost, probably, 1*d.* per mile per passenger near York: this is, of course, given simply as an illustration. Taking the average receipts for a passenger at 1½*d.* per mile, nearly the whole will be got at London as profit, while at York comparatively nothing will be got, or the expense may exceed the fare. Would a Railway Company not look at the whole charge and the whole expense before they decided what that whole charge should be, and, in fixing their scale of fares, would they not take all this into consideration?

In less than two years after, viz., in 1869, another case was submitted to the Court of Queen's Bench, viz., the Llantrissant Case, Great Western Railway Company.*

In laying the facts of this case before the Meeting, I

* 38 L. J. (M. C.) 93.

cannot do better than quote from Mr. BALFOUR BROWNE, who says at page 170 of his well-known book on rating :—

“The Ely Valley Railway, the greater part of which
“was within the rating parish, supplied traffic to the South
“Wales Railway, which was beyond the parish. The
“South Wales Railway was the property of the Great
“Western Railway Company, who were the occupiers of
“the Ely Valley Railway at a fixed rent. The question
“for the Court was whether the Great Western Railway
“Company could be rated at an increased amount in
“respect of its value as a feeder, and as supplying traffic
“to other parts of their line.”

Mr. Justice MELLOR delivered the following judgment, and HANNEN and HAYES, J.J., concurred in the opinions expressed :—

“I am of opinion that our judgment should be for the
“appellants. It is extremely difficult to reconcile everything
“which has been said as to the mode in which railways
“ought to be assessed. I think, however, that in this case
“it is immaterial whether the line to be rated is a branch
“line or a portion of the main line. What is to be done
“is to ascertain the value of the railway in each particular
“parish through which the line passes, that is, what would
“the hypothetical tenant give for this portion of the rail-
“way? And I think that it would be very unsafe to
“disturb the recent decisions by introducing a different
“principle, and deciding that the fact that the railway
“in Llantrissant contributes to the traffic upon the main
“line ought to be taken into account in ascertaining the
“rateable value. For my own part, I adhere to the
“opinion I expressed in *The Great Eastern Railway Com-
“pany v. Haughley*. With regard to the observations
“attributed to the Court in *The London and North Western
“Railway Company v. Cannock*, I think the Lord Chief

“ Justice must be taken to have reconsidered them in *The Great Eastern Railway Company v. Haughley*, for, to the best of my memory, he fully concurred in that decision, and there was not the slightest difference of opinion upon the Bench. I repeat what I said in that case, that the value must depend upon the actual earnings of the railway within the parish, deducting the expenses which properly belong to that part of the line. The rent which would be paid by the hypothetical tenant, and not that which is paid by some particular tenant, must decide the value. There is nothing to enable us to take into consideration the value of the line as a feeder to other lines in different parishes. The simple question is, whether, because traffic comes from the Ely Valley Railway to the Great Western, any addition ought to be made to the rateable value of the Ely Valley Railway in the parish of Llantrissant? To this question there can be but one answer, that no such addition ought to be made to the value, and therefore the order of the Sessions must be confirmed.”

Mr. Justice HANNEN concurred.

Mr. Justice HAYES said: “ The Case of *The Great Eastern Railway Company v. Haughley* seems to have settled the law after some aberrations from the ordinary rule in previous cases.”

And yet in 1873 comes another Case, that of *The London and North Western v. The Bedford Union*, in the matter of the Parish of Goldington, which unmistakeably re-establishes contributive value.

It is thus stated in the head notes :—

“ A line of railway originally made by an independent Company became vested in the appellants, under an agreement by which the appellants guaranteed a certain percentage upon the money expended upon the line. The

“ line communicated with the main line of the appellants,
 “ and with three other main lines of railway owned and
 “ worked by three other Companies respectively. If the
 “ line were in the market, either of such three Companies
 “ would, in consequence of the traffic which it would bring
 “ to their line, be willing to acquire it upon the same terms
 “ in every respect as those upon which the appellants held
 “ and worked it :—Held that, in ascertaining the rateable
 “ value of a part of the line which passed through the
 “ parish of Goldington, the fact of there being such four
 “ Companies who would so compete for the line might be
 “ taken into consideration.” *

On appeal against an assessment for the relief of the poor of the parish of Goldington, in the county of Bedford, made the 30th day of June, 1870, the appeal was dismissed, subject to the opinion of the Court of Queen’s Bench on the following case :—

1st. The appellants are owners of the line of railway from Bletchley to Bedford and of the line of railway from Bedford to Cambridge, which two lines form one continuous railway from Bletchley to Cambridge, and are worked as part of the London and North Western Railway system ; each of these lines passes through parishes in the respondents’ union.

2. The line from Bedford to Bletchley is a double line, and joins the appellants’ main line at Bletchley.

3. The line from Bedford to Cambridge is a single line ; it joins the main line of the Great Northern Railway at Sandy, and then runs on to Cambridge, where it joins the Hitchen branch of the Great Northern at the main line of the Great Eastern Railway. At Bedford, the Bedford and Bletchley line crosses the main line of the Midland Railway

* *Vide* Dorking Case, page 218.

upon the level, and for the purpose of goods traffic is connected with it, but the stations are some distance apart.

4. The said lines from Bletchley to Bedford and from Bedford to Cambridge were originally made by independent Companies or individuals; but both these lines have now become vested in the London and North Western Railway Company, the former, by virtue of an Act of Parliament passed in the 8th and 9th years of Her Majesty, c. 43, the shareholders becoming stockholders of the said Company, and having 4 per cent. guaranteed to them upon a sum of £365,000, agreed upon as representing the sum expended upon the line; and the latter, by virtue of an Act of Parliament passed in the 27th and 28th years of Her present Majesty, c. 62, whereby the line became the property of the London and North Western Railway Company, subject to a like guarantee of 4 per cent. per annum upon a sum of £290,000. Either of these interests thus guaranteed would, if regarded as rent, and taken as the basis of rateable value, give a much larger rateable value per mile than that contended for by the appellants.

5. In order to compete on equal terms as far as fares are concerned with the Midland Railway Company, the Great Northern Railway Company and the Great Eastern Railway Company, the appellants, charge the same fares for goods and passengers carried to London or the North, from any station on the Cambridge and Bletchley line, *viâ* Bletchley and the appellants' main line, that the Midland, Great Northern, and Great Eastern Railway Companies respectively charge for carrying the same from the same station, *viâ* Bedford, Sandy, or Cambridge respectively, upon their main lines.

8. The appellants ascertain what they contend to be the rateable value of the line in the respondents' parish in the usual manner, treating the Cambridge and Bletchley

Lines as a portion of the London and North Western Railway system, that is to say, if a passenger is carried from Bedford, *viâ* Bletchley, to London, a distance of $62\frac{1}{2}$ miles, they apportion the fare as above described equally amongst the $62\frac{1}{2}$ miles, and then deduct from the earning of each mile so ascertained the expense of working it and other usual deductions, the same being ascertained when practicable, for each particular mile, and not being a general average of the whole system, but still treating the branch from Bletchley to Cambridge as a part of the North Western system, for the purpose of calculating the general and miscellaneous expenses.

9. The respondents contend, first, that, in ascertaining the rateable value of the portion of the line in their parishes, if it is to be ascertained by deducting the working expenses from the actual receipts, they are entitled to allocate to the Bedford and Bletchley Line so much of the fares charged, in such a case as that above described, as is equivalent to what is usually charged by the appellants to a traveller who travels only from Bedford to Bletchley, and that this should be apportioned equally amongst the 16 miles from Bedford to Bletchley.

10. If the Bletchley, &c., Line were now in the market, either of the three Companies above mentioned would, in consequence of the traffic it would bring to their line, be willing to acquire it upon the same terms in every respect as those upon which the appellants now hold it. If so acquired by either of such other Companies, they would work it in a similar manner to that in which it is now worked by the appellants; and under such circumstances, the traffic upon it would not produce a higher rateable value, calculated upon the principle now contended for by the appellants, than that it now produces. The respondents contend that the above cir-

cumstances must be taken into consideration in estimating the rateable value of the appellants' line.

11. If the respondents are right on either of the above contentions, the rate is to be confirmed.

12. If the appellants are right in their contention, their line in the said parish of Goldington is to be assessed at £50 per mile net rateable value.

The 10th paragraph is the important one in this case. It is the one which, in spite of the contest on the part of appellants' counsel that the Haughley and Llantrissant Cases were binding authorities, clearly weighed with the Court in the decision they came to, that after all there was such a thing as Contributive Value, Mr. Justice BLACKBURN remarking, "that he did not see what the Haughley Case " had to do with the one before the Court."

As representing the state of the law as it now stands, the Judgment is given *in extenso*.

BLACKBURN, J. : " The question to be determined arises " upon the facts stated in paragraph 10.

" If the circumstances there detailed are to be taken " into consideration in estimating the rateable value, the " rate is to be confirmed.

" We must consider this question according to the " general principle laid down in the Parochial Assessment " Act, 6 and 7 William IV., c. 96, s. 1., and embodied in " the Union Assessment Act, 1862, 25 and 26 Vict., c. 103, " s. 15. The rate is to be made upon an estimate of the " net annual value of the hereditaments, that is to say, of the " rent at which the same might reasonably be expected to " be let from year to year, free of all the usual tenants' " rates and taxes and tithe commutation, rent-charge, if any, " and deducting therefrom the probable average annual " costs of the repairs, insurance and other expenses, if any,

“ necessary to maintain them in a state to command such
 “ rent. It happens, unfortunately, in many cases, especially
 “ in rating Railway Companies, that there is great difficulty
 “ in applying this principle correctly, because, from the
 “ nature of things, the property in a parish is not such as
 “ could be let to a tenant from year to year at an annual
 “ rent. It often happens that a link in a railway passing
 “ through parish B, with a station in A and another in B,
 “ would not, if considered alone, let for a farthing, and in
 “ such a case it becomes necessary to consider the whole
 “ complex matter, and see, as well as can be, what would be
 “ the rent of the particular part if it were let, and what
 “ are the proper elements for arriving at a conclusion as to
 “ the amount of such rent, and what would be the result of
 “ the higgling in the market if it could be let. In the
 “ present case there is no higgling in the market, and we
 “ must see what are the elements from which we arrive at
 “ a conclusion in such a case.

“ It is quite clear that the rent which a tenant from
 “ year to year would give must be regulated by two mat-
 “ ters. One is the benefit that such a tenant would get,
 “ because no man would pay more than he expected to make
 “ out of the property; and the other is the nature of the
 “ property, such as its local situation and other things, and
 “ the number of parties competing for the property. In
 “ delivering the judgment of this Court in *The Mersey Docks*
 “ *and Harbour Board v. The Overseers of Liverpool* (8), I
 “ said: ‘ No doubt in fixing the rent of chambers in one of
 “ ‘ the Inns of Court, the facility for carrying on the legal
 “ ‘ profession in them is an element, and an important one,
 “ ‘ but the actual income of the tenant is not. The cham-
 “ ‘ bers command no more rent when let to the Attorney-
 “ ‘ General than they would do if let to a young barrister

“ ‘just called to the bar, who does not yet pay his expenses.’
 “ Let us now see what are the matters to be taken into
 “ consideration in putting a maximum limit on the rent.
 “ From *The King v. The New River Company* (9) down-
 “ wards, it has been considered that the value of the occu-
 “ pation is the value enhanced by the advantages which it
 “ possesses, and the capability of producing profits, either in
 “ the parish or elsewhere. The question is, how much will
 “ the occupier get from the occupation enhanced by what-
 “ ever the occupation will give him. There was no diffe-
 “ rence as to the principle in *Allison v. Monkwearmouth*
 “ *Shore* (6), though there was some difficulty in applying it
 “ (His Lordship stated the facts of that case). ERLE, J.,
 “ differed from the rest of the Court, but all were agreed
 “ that the question was, what was the value of the occupa-
 “ tion, what facilities there were, and what would pass by
 “ the demise of the premises?

“ It is necessary, also, to consider who would tender for
 “ the property if it were put up for competition. In the
 “ present case, there is one railway, and the number of per-
 “ sons or Companies who would tender for it is limited; the
 “ occupiers would, as incident to their occupation, and con-
 “ sequent on the contract, have power to influence the
 “ traffic, so as to determine by which railway it should
 “ be carried, by the Midland or by the London and North
 “ Western. Either of the Companies mentioned in the
 “ case would be willing to acquire the line upon the same
 “ terms as the appellants now hold it. I do not think the
 “ words used in the 10th paragraph mean that they would
 “ acquire it on the same terms, buying it in perpetuity, but
 “ that they would be willing to pay for it from year to year,
 “ supposing, contrary to the facts, and contrary to what is
 “ likely to happen, the owners offered to let it from year to

“ year to any person who would take it. I think that the
 “ actual rent to be obtained by letting the line would be
 “ enhanced by the fact of there being four competitors for
 “ it. It is sufficient to say that this is an element. The
 “ Sessions must take the circumstances into consideration,
 “ that there are four Companies who would bid for the line,
 “ and they must get at the amount of rent as they can.”

QUAIN, J.—“ The question is, whether the matter con-
 “ tained in the 10th paragraph ought to be taken into
 “ consideration in the determination of the rateable value
 “ of the railway in this particular parish. I am of opinion
 “ that it ought to be taken into consideration. We do not
 “ decide the rent that is given, or which these parties would
 “ be willing to take it at, is conclusive, but simply that it is
 “ an element to be taken into consideration. I think that
 “ it should be taken into consideration on two grounds ;
 “ first, because we are told that several Railway Companies
 “ would compete for it, because it is so valuable a thing for
 “ the purpose of influencing the traffic on those lines. The
 “ Great Northern Railway Company, the Great Eastern
 “ Railway Company, and the Midland Railway Company
 “ would each be willing to acquire it on the same terms as
 “ the North Western, and pay the same rents for it as the
 “ North Western does now. Now, I think that is because
 “ it is not merely valuable by reason of what it earns in the
 “ parish, but by reason that it influences the traffic on the
 “ line generally : the occupation is worth something more
 “ than the earnings of that particular line in the parish.
 “ I apprehend that the test is, what a tenant from year to
 “ year would give for it. But then it remains to be con-
 “ sidered, what is the occupation worth ?

“ That is governed by the Parochial Assessment Act, of
 “ which the words are, the ‘rent at which the heredita-

“ ‘ments might reasonably be expected to let from year to
 “ ‘year,’ and, as I understand it, the Dorking Case (3)
 “ distinctly decides that in doing that you are to take into
 “ consideration not only the actual earnings in the parish,
 “ but that you are to take into consideration also, in
 “ judging what a tenant would give for it, what further
 “ profit he makes by reason of the occupation, although
 “ that profit may be earned elsewhere.”

ARCHIBALD, J. : “ I think the 10th paragraph must be
 “ taken to mean that if the line were to be let from year to
 “ year, and was in the market, there are four Companies
 “ who would be willing to bid for it, and willing to take it
 “ on the same terms. If they were willing to take it,
 “ they would take it with all its advantages ; I think, there-
 “ fore, that those circumstances ought to be taken into
 “ account in applying the Parochial Assessment Act, and in
 “ determining the rateable value of the line in the parish.”

Judgment for the respondents.

Commenting upon the judgment, Mr. BALFOUR BROWNE,
 at page 180, says :—“ We cannot but think that this case
 “ is in opposition to the cases immediately before it in point
 “ of time, and in harmony with the earlier cases ; and
 “ Mr. Justice QUAIN. refers to one of these as enunciating
 “ the principle upon which the case under consideration was
 “ to be decided. We cannot but believe that, if this case is
 “ to be regarded as good law, the Haughley and Llantris-
 “ sant Cases must be looked upon as bad. If this is to be
 “ regarded as law, the non-parochial earnings, to which a
 “ branch line has contributed, are to be taken into con-
 “ sideration in arriving at the rateable value of the branch.
 “ No doubt there will in many cases be much difficulty
 “ experienced in doing this ; but most of the calculations
 “ which have to be made by Surveyors in relation to railway

“ rating are difficult, and this does not seem to present any greater difficulty than these.”

I certainly agree with Mr. BROWNE, that the decisions are conflicting; there is *no* contributive value on a branch line in the Cases of Haughley and Llantrissant; there it is contributive value upon a branch line in the Cases of Dorking and Bedford. What is the difference between the cases? The only one, as far as I can see, is that with Haughley and Llantrissant they are simply branches running into one main line. With Dorking and Bedford they intersect three or four main lines, and could be made contributory to any one.

Competition would exist in the case of Dorking and Bedford, but not in Haughley and Llantrissant.

I do not, however, agree with him, when he says, that this (measurement of contributive value) “ *does not seem to present any greater difficulty than these.*”

Unfortunately, I am speaking from experience, having worked it out some years with the concurrence of Mr. HORN, the then rating clerk of the South Western Railway, in the parish of Staines, and succeeded in establishing before the late Mr. PASHLEY, Assistant Judge of Middlesex, an amount, by means of the introduction of contributive value, of £460, instead of the amount of £60, which it otherwise would have been. The trouble it gave and the time it took, however, were immense, and the expense was so great that powers had to be obtained from the then Poor Law Board to spread the payment over five years.

The following formula, representing the way in which, in the case above, the net value per mile in respondents' parish was worked out, will give some idea how far the solution is easy or otherwise. It will speak for itself:—

FORMULA.

0 (1) (2) (3) (y) (x) (n)

Let (1) (2) represent the stations on a line of railway
(n) being the terminus.

Let $m_1 m_2 \dots m_n$ be the lengths of the stages in miles —
 $e_1 e_2 \dots e_n$ be the expenses per in each on each
of these separate stages.

Let r_p^o represent the gross receipts per mile on any stream
between the stations (p) and (g).

Gross receipts per mile on

$$\text{first stage} = r_o^1 + r_o^2 + \dots + r_o^n \quad (A)$$

$$\text{Net profit per mile} = r_o^1 + r_o^2 + \dots - e_1 \quad (B)$$

And net profit per mile due to

$$\text{the stream } o \text{ to } (x) = r_o^x - e_1 \frac{r_o^x}{r_o^1} + \dots + r_o^n \quad (C)$$

On second stage gross receipts

$$\text{per mile} = r_o^2 + \dots + r_o^n + \frac{r_o^2}{r_1^2} + \dots + \frac{r_o^n}{r_1^n} \quad (D)$$

∴ Net profit per mile due to stream

$$o \text{ to } (x) = r_o^x - e_2 \frac{r_o^x}{r_1^2 + \dots + r_1^n} + \frac{r_o^x}{r_1^2 + \dots + r_1^n} \quad (E)$$

∴ Total value of stream o to (x) will be

$$r_o^x \left\{ m_1 + m_2 + \dots + m_x - \frac{m_1 e_1}{r_o^1 + \dots + r_o^n} - \frac{m_2 e_2}{(r_o^2 + \dots + r_o^n) + (r_1^2 + \dots + r_1^n)} \right. \\ \left. - \text{Din} - \frac{m_x e_x}{(r_o^x + \dots + r_o^n) + (r_1^x + \dots + r_1^n) + \dots + (r_{x-1}^x + \dots + r_{x-1}^n)} \right\}$$

And total value per mile of same stream will be (F)

$$r_o^x \left\{ 1 - \frac{m_1 e_1}{r_o^1 + \dots + r_o^n} + \text{Din} + \frac{m_x e_x}{(r_o^x + \dots + r_o^n) + \dots + (r_{x-1}^x + \dots + r_{x-1}^n)} \right\} \quad (G)$$

Total value per mile of a stream (y) to (x) will be

$$\left\{ 1 - \frac{m_{y+1} e_{y+1}}{(r_o^{y+1} + \dots + r_o^n) + \dots + (r_{y-x+1}^{y+1} + \dots + r_{y-n}^n)} + \dots + \frac{m_x e_x}{(r_o^x + \dots + r_o^n) + \dots + (r_{x-1}^x + \dots + r_{x-1}^n)} \right\} \quad (H)$$

Let this be represented by T_y^x

Suppose that p miles of the line between $(x-1)$ and (x) be
in the parish and also (q) miles between x and $(x+1)$.

The total value of the different streams, in so far as they lie in the Parish, will be

$$p \left\{ \begin{array}{l} T_o^x + T_o^{x+1} + \dots + T_o^n \\ + T_1^x + T_1^{x+1} + \dots + T_1^n \\ + \dots \dots \dots \\ + \dots \dots \dots \\ + T_{x-1}^x + T_{x-1}^{x+1} + \dots + T_{x-1}^n \end{array} \right\} + q \left\{ \begin{array}{l} T_o^{x+1} + \dots + T_o^n \\ + T_1^{x+1} + \dots + T_1^n \\ + \dots \dots \dots \\ + \dots \dots \dots \\ + T_{x-1}^{x+1} + \dots + T_{x-1}^n \\ + T_x^{x+1} + \dots + T_x^n \end{array} \right\} (K)$$

With these facts before them, and looking at the conflicting decisions of the Court of Queen's Bench on the subject, the Members can judge for themselves:—

First—Is there such a thing as contributive value, or is it *vox, et præterea nihil*?

Secondly—If there be, did the respondents in the Haughley case adopt the only practicable method of measuring it?

Thirdly—If they did not, what is the proper method of doing so? And

Fourthly—Is the game worth the candle?

Each Member of the Institution will, of course, judge for himself; it is presumed, I suppose, that the author of a Paper like this would have an opinion, or wherefore write the Paper? I therefore give it.

My opinion is that there is such a thing as contributive value, that the respondents in the Haughley Case did adopt the only practicable solution, but that the game is, decidedly, not worth the candle. Still I may be mistaken. There may be no contributive value, the respondents' mode of measurement may be the wrong one, and the right method when discovered may be worth adopting. I therefore leave the matter in the hands of the Meeting, trusting that the discussion it may possibly give rise to will either bring out the proper solution—the *Q.E.D.*—or establish conclusively the *reductio ad absurdum*.

Mr. E. RYDE (Vice-President) said that he had much pleasure in moving that the thanks of the Meeting be given to Mr. CASTLE for preparing a Paper in which he had collected, into a form convenient for use, all the cases bearing upon the theory of contributive value.

As the subject of railway rating had recently been so fully discussed, he did not propose to make any remarks upon the general question, but would confine himself to one or two suggestions which might assist the Members in mastering the subject of contributive value.

He would recommend the study of this complex principle—started by Mr. CASTLE, in the Haughley Case. Anyone who succeeded in mastering it need not doubt his ability to cope with any difficulty he might meet with in rating railways.

If a Surveyor had to rate a railway, whether a rich main line or a poor branch, he was bound by Act of Parliament to rate it at what it might reasonably be expected to let for. Of course it was difficult to say, in some instances, what particular portions would let for, but the foregoing principle was to guide him in all cases. Suppose a piece of railway (a branch line) worked at a loss, or at very little profit, and another piece of railway (main line) worked with it at a very large profit, and assume that the first-mentioned line belonged to separate owners, and might next year be let to some other Company. Did it not follow that the main line Company would be willing to pay a great deal of rent for it rather than lose it or let it fall into the hands of another Company? But if, on the other hand, it so happened that the poor branch and the main line were all one property, notwithstanding that there might be half a dozen other rich main lines, the Companies owning and working which would all be competitors for the branch if they could get it, it could not be said that that branch line was worth as much

pro ratâ as the main line, because if it were a separate property (which it was not) somebody else would give a great deal more for it? It might, of course, be conceived that it ought to carry a higher rate; but it was part of one property, and was to be rated at what it might reasonably be expected to let at. It was reasonable to suppose that a tenant would give more rent for the rich main line which earned more money, than for the poor branch line which scarcely earned its working expenses; and, therefore, it could not be said that the branch line should be rated on any other principle than having regard to its local earnings and expenses as with the main line. If it were contended that the branch line contributed to the main line, and increased the profits of the main line, it must equally be admitted that the main line contributed to the value of the branch, for without the main line the branch could not be worked at all. If it only earned so small a profit that it was not worth working by itself, and if it could only be worked with the main line, then it followed that the main line contributed to the value of the branch, and difficulties began at once to multiply.

He hoped that some facts which had been scarcely noticed in the Paper would not be overlooked. The Court of Queen's Bench, when it came to a decision and delivered judgment, delivered it on a case found by the Sessions. In the Bedford Case, for instance, it was found by the Sessions that the rent which was paid by the London and North Western Railway Company for the Cambridge branch was no greater than either of the other competing Companies, the Midland, Great Northern or Great Eastern, would be willing to pay. That being so, no Court of law could come to any other decision than that the rent which the four Companies were willing to pay was the rent which the hereditament might reasonably be expected to let at.

Mr. CASTLE in his Paper said, and everybody said inferentially, that this case set up the principle of contributive value, but he (Mr. RYDE) failed to see it. The Sessions found a fact, and the Court of Queen's Bench upon that fact, and upon the law, determined the rateable value of the line. The Dorking Case, of course, was a very different one, and it was singular that it was not regarded either by the Parish Officers or by the Company as establishing contributive value. A rate of £800 per mile (the rent paid for the line) was reduced to something lower than £250, and upon that assessment, or upon a very little increase on it, that line had been rated ever since. The decision was correctly given in the Paper, but the actual rating following on that decision had been as above stated, these words in Lord CAMPBELL's judgment having been held to materially qualify it, viz.: "I would earnestly dissuade "Parishes from ever making a claim under this head (contributive value), unless where upon clear evidence the "claim can, in point of fact, be established."

Contributive value, unless it could be measured, was better let alone. It all came back to this; what was it reasonable to suppose the hereditament would let for? Whenever judgments had been in favour of maintaining a higher rate than the traffic seemed to justify, there had been either the finding of the Sessions or something special in the case which had induced a judgment in that direction.

Mr. E. P. SQUAREY (Member) having seconded the vote of thanks—

Mr. H. J. CASTLE, Sen. (Member) said that he had exhausted the whole subject in his Paper, and had therefore nothing to add to what he had already said. He quite agreed that contributive value, unless it could be proved

very clearly, and measured satisfactorily, was better let alone. He begged to thank the Members for the patience with which they had listened to his Paper.

THE PRESIDENT perfectly agreed with what been said by Mr. RYDE as to the value of the Paper, and if it had not led to a discussion it was not because it was not fully appreciated, but because the subject had already been discussed, incidentally and by anticipation, in the cognate Papers read by Mr. HEDLEY.

Now, the Paper was valuable as giving a clear and connected summary of all the cases on contributive value which had been tried before the Courts. This collection of cases certainly did appear to contain a tangled web of conflicting decisions, and yet, on closer examination, and after a careful analysis, these apparently conflicting decisions were capable of being reconciled to a considerable extent.

He would refer for a moment to the Amwell Spring Case, about which Mr. RYDE and he knew something. He did not regard that case as at all analogous to a railway case, for a spring of water must necessarily be contributive in a very high degree to the value of waterworks, for without it all the pipes would be nothing more than old iron, and all the reservoirs nothing more than useless earthwork.

The case of a railway was not a case in which one part of the line, or one part of the works, was absolutely essential to the whole, but it was simply a case of the division of the rateable value between the different parishes of the whole line.

Now, it might be asked, when one heard so much of the contributive value of branch lines, what had branch lines really contributed to the value of the main lines? Had they contributed profit, or had they contributed loss? As all knew, a great many of them had contributed little or

nothing but loss. He recollected very well when the main line of the London and North Western Railway paid 10 per cent. because it was only a main line. Since that time—now some 30 or 35 years ago—a number of unproductive branches had been constructed, and the dividends were reduced to $6\frac{1}{2}$ per cent. He recollected, also, when the Great Western Railway paid 8 per cent. It could not now pay 4 per cent., and for the same reason, that it had made a great number of unproductive branches.

Now the real question at issue was whether, in rating railways, the old-fashioned parochial principle was to prevail, or whether the parochial principle was to be modified by the principle of contributive value. He called it the old-fashioned parochial principle because it was the principle adopted in the valuation of all kinds of rateable property before railways were invented. If a farm extended into half-a-dozen different parishes, it was valued, or at least it ought to be valued, as a whole in the first place, and that value as a whole ought to be apportioned between those half-dozen parishes in proportion to the quality and situation of the land in each parish. Now that was precisely the principle which, in his opinion, should be adopted in the valuation of a railway, when that railway was one entire rateable hereditament extending into many parishes. The cases were strictly analogous. The productive main line was strictly analogous to the best meadows of the farm, and the poor unproductive line was strictly analogous to the barren heath or poor land on the farm—the same principle applied to the rating of both. Now contributive value was an attempt to modify this, on the principle that, for the purpose of rating, the most productive parts of a line should contribute something to the unproductive parts, so as to raise them (he would not say to an equality, but) to something nearer to an equality. No such principle

had ever been adopted, according to his experience, in the valuation of a farm extending into several different parishes.

There were, in fact, two classes of cases. In the first place there was the case of branch lines which formed internal part of the main line, and therefore, of one entire rateable hereditament extending into various parishes. In that case, there was no contributive value, and in support of that view he would put a test case, apart from collateral questions,—for there was sometimes nothing like testing a thing which appeared rather complicated, by a plain, simple case. Suppose a main line to be constructed from A (through B) to C, and suppose the part from A to B to be very profitable and productive, and the part from B to C to be unprofitable and unproductive. No one, he apprehended, would endeavour to make the productive part of that main line contributive to the unproductive part, in rating it. That main line would be rated, as a matter of course, as one main line, upon the net earnings in each parish, whether more or less.

Now, suppose a branch line to be constructed by the same Company, forming part of the same rateable hereditament—a branch line, say from B to D,—and that this branch line had precisely the same traffic per mile, and was worked at precisely the same expense, as the unproductive part of the main line, from B to C. Was it possible to lay down a different principle for the rating of that branch to that laid down for the rating of the unproductive part of the main line? The two must be rated on the same principle, whether that principle be the parochial principle or whether it be the contributive principle. If the contributive principle were applicable to one it was applicable to both, and if the parochial principle were applicable to one it was applicable to both. He did not think there could be a question about it; it seemed to him to be as

clear as noonday. That represented one class of case, illustrated by the Haughley Case.

As he had said on a previous occasion, in the few remarks he made on closing the debate on Mr. HEDLEY's Papers, in his opinion contributive value was reciprocal, and that might be instanced in the case he had just been putting. If the main line from A to B was to be debited with some part of its traffic to contribute to the rating of the poor part of the main line from B to C, and the branch line from B to D, why should not the poor part of the main line from B to C and the branch line from B to D be debited in like manner with part of the traffic which the main line from A to B brought upon them? The two cases were perfectly identical, and the fallacy of contributive value, in his opinion, lay in looking at it on one side and not on the other.

Then there was the second class of case, viz., that of branch lines made by independent Companies, but which were not worked by them because it had been found better for the owners of such lines to lease them to the owners of the main line, or to arrange for their working them at a certain percentage of profit. Now, in that case, the branch was an independent and separate rateable hereditament, and was to be valued as such. It was no part of the general system of the Company. It was a line they had taken or agreed to work for the purpose of avoiding competition, or because of the pressure put on them to construct a railway to some small town. Now, in that case, it appeared to him that the value of the branch line depended entirely on the competition which arose for it. In the Llantrissant Case, which had been quoted, there was only one line to compete, and in the Bedford Case there were four lines to compete, and the effect was that the value of that line need not be ascertained by considering what a hypothetical tenant

would give for it, for there were four parties ready to take it, and to bid against one another for it. The value of that line would be determined by what was known as the "higgling of the market," in the same way as the value of a house or farm; but he thought it was a misnomer to call that "contributive value," and in his opinion, this distinction went far to reconcile the apparently conflicting decisions.

The case of the branch line, under such circumstances, was precisely that of a field which happened to abut on four separate farms, and the four farmers, very desirous of having it, were willing to pay for it an accommodation rent. But suppose that field formed part of a farm, it was rated as part of that entire hereditament; it was not rated as a separate field, but rated as part of the whole, and that distinction arose in the two classes of cases which he had endeavoured to explain. To put it shortly, the test of contributive value was this—was the branch line part of one entire rateable hereditament? If so, it must be valued as part of it, and no question of contributive value arose. But, if the branch line were an independent line, constructed by an independent Company, and worked by or leased to one of the great Railway Companies, then it was a property which commanded competition in the market, and that competition might be fairly taken into account in estimating its value for rating.

The vote of thanks having been put and carried unanimously, the Meeting adjourned.

HOP CULTIVATION.

By R. W. TOOTELL (MEMBER).

*Read at the Ordinary General Meeting of the INSTITUTION OF SURVEYORS,
March 31st, 1879.*

WILLIAM JAMES BEADEL, VICE-PRESIDENT, IN THE CHAIR.

It may appear at first sight, that the cultivation of hops being confined to so limited an area of the total acreage of land under cultivation in England—viz., to about 72,000 acres only, out of 25 millions, that is less than 0·3 per cent.,—the subject is hardly one of sufficient importance to bring before the Institution of Surveyors; but when we consider that the cultivation of these 72,000 acres involves an annual outlay of between 3 and 4 millions of pounds; that at least a million and a half of money is invested, as capital, by the planters; and that of the million and odd acres, forming the total acreage of the important county of Kent, 46,593 acres are now under hop cultivation, the importance of the subject becomes more manifest. It will, perhaps, be admitted, that even by reason of this limitation of area, and of the special circumstances which attend this species of cultivation, it will be advantageous to consider the subject, so that those gentlemen who have little or no practical acquaintance with the hop-growing districts, may have an opportunity of gaining information which will be of service to them in the future, in the event of their professional duties bringing them in contact with this class of landed property.

So much by way of apology for the subject of this Paper. And first, I will give a brief historical survey of the introduction of hops into England, which must, of necessity, be brief, for, after consulting what authorities are to be

found upon the subject, I can obtain but very meagre information.

TIZARD, in his book "On Brewing," in speaking of "this excellent plant, the hop," states that "it appears to have been cultivated from time immemorial," and to have been mentioned by PLINY, "who describes it as a plant reared in Germany, in his day, as a pickle or preservative relish to beer, and as entwining itself round willows, with which the Netherlands then abounded." And it is from this habit of twining round, and thereby choking the willows, that it is said to have derived the name "Lupulus," or little wolf.

LANCE, in his book entitled "The Hop Farmer," states that "the hop was brought into this country from Flanders, about the year 1525," and "in 1528 Parliament was petitioned to forbid its use, as being a pernicious weed that would spoil the taste of drink."

From BECKMAN'S "History of Inventions" we learn that plantations of hops had begun to be formed in England, A.D. 1552, in which year they are first mentioned in our Statute Book.

The first book which was printed upon the subject appears to have been one by "REYNOLDE SCOT," published in the year 1578, very shortly after the introduction of the cultivation into England, which was entitled, "A Perfite Platforme of a Hoppe Garden, and necessarie instructions for the making and mayntenance thereof, with notes and rules for reformation of all abuses commonly practised therein: very necessarie and expedient for all men to have, which in any wise have to do with Hoppes;" and as the author addresses his advice to one "Mayster LOVE-LACE, of Bethersden," in the Weald of Kent, we may, I think, conjecture that it was in this part of England that the cultivation was commenced; and seeing that the introduction of the plant came from Flanders, it was very natural

that this south-east corner of England, probably the landing-place of Flemish agriculturists, presenting a soil and climate suitable to the purpose, should have been the first spot chosen for the experiment.

In the year 1693, the culture became well established in Kent, and in 1710 a duty of three-pence per pound was laid upon all hops imported, and heavy fines were inflicted in cases of fraud. By the 7th of Geo. II., 1734, a duty of 1*d.* per pound was levied on all hops grown in England, and hop-grounds were required to be entered in the books of the Excise, under a penalty of 40*s.* per acre. Places of curing and keeping were also to be entered, and all hops were to be brought to be cured within six weeks after picking, under a penalty of 5*s.* in the pound. This duty of 1*d.* per pound was subsequently increased, in 1802, to as much as 2½*d.* per pound, but reduced in 1860 to 1½*d.*, and finally totally repealed in 1862. This total repeal of the hop-duty, and the discontinuance, in consequence of the vexatious Excise regulations and supervision, had been for some years agitated for, and was, when effected, considered a great relief to the planter. One immediate effect appears to have been the increase in the extent of cultivation, for whereas during the ten years immediately preceding the repeal, viz., 1852-1861, the acreage under cultivation averaged about 50,000 acres, in the ten following years it rose from about 48,000 acres in 1861 to about 61,000 in 1871, or an increase equal to 27 per cent.; and the average of the last ten years, viz., 1869 to 1878, has been about 65,500, or an increase, as compared with the acreage of the ten years above quoted, of about 7 per cent.

It may be interesting here to note the fluctuations which have occurred in the acreage under plant from the year 1807 until the present time; and the following table, which I have prepared, will show how curious and uncertain it has been:—

Year.	Acreage under Cultivation.	Period of Increase or Decrease.	Increase per Cent.	Decrease per Cent.
	ACRES.	YEARS.		
1807	38,218	—	—	—
1813	39,521	5	3.40	—
1819	51,014	6	29.08	—
1823	41,458	4	—	18.70
1826	50,471	3	21.74	—
1829	46,135	3	—	8.59
1837	56,323	8	22.08	—
1843	43,157	6	—	23.37
1847	52,325	4	21.24	—
1849	42,798	2	—	18.20
1855	57,757	6	34.96	—
1859	45,665	4	—	20.93
1867	64,455	8	41.14	—
1870	60,594	3	—	5.99
1878	71,239	8	17.56	—

The total increase during the 71 years being 33,021 acres, or more than 86 per cent.

The most rapid increase, it will be seen, occurred in the three years 1824 to 1826, when no less than 9,013 acres were added, and the most rapid decrease, in the two years 1848-9, when no less than 9,527 acres were grubbed.

From 1849 to 1855 a large increase took place, nearly 15,000 acres being added during the six years; and again from 1859 to 1867, nearly 19,000 acres were added in eight years. Since 1870, however, there has been a steady increase, equal to about two per cent. per annum, 10,645 acres having been planted in the eight years.

Whether these uncertain fluctuations are attributable to any definite cause, or are simply the result of accident or the caprice of the planters, I cannot say; but judging from the fact that the decrease has generally happened immediately after a large crop has been grown (as in the years 1818 and 1819, when the growth was considerably above the average), and when probably prices have been correspondingly depressed, it is very probable that, speaking generally, low

prices have caused grubbing, and that, on the other hand, when prices have ruled high, planting has been extended.

The Geographical Distribution of the land under hop cultivation in England is the next point which I would mention.

From the Board of Trade returns I find that hops were cultivated in the year 1866 in 26 counties in England, but, in 1878, in 13 only. The following table with the acreage in plant in each county, in each of these years respectively, will show how the cultivation was and is distributed.

NAME OF COUNTY.	ACREAGE UNDER CULTIVATION AS HOPS.	
	IN 1866.	IN 1878.
Kent	36,367	46,593
Sussex	8,488	10,991
Hereford	4,763	5,947
Hampshire	2,119	3,190
Worcester	2,821	2,473
Surrey	1,881	2,305
Essex	137	37
Suffolk	127	75
Nottingham	76	37
Shropshire	—	90
Yorkshire	42	
Berks	36	
Gloucester	29	32
Derby	25	
Lincolnshire	24	
Bedfordshire	3	
Buckingham	2	
Cambridge	4	
Chester	6	
Devon	9	1
Durham	3	
Hertford	2	3
Lancaster	1	
Middlesex	4	
Northampton	1	
Warwick	7	
Wilts	8	
Total	56,985	71,774

By the foregoing Table it will be seen that the cultivation of hops in England is being concentrated gradually in the six first-named counties, which may be called essentially "The Hop-growing Counties of England"; and it may very naturally be asked, what are the reasons for this exclusive choice of certain localities to the utter exclusion of almost all others?

According to the agricultural returns for this year, the total quantity of land under all kinds of crops, bare-fallow, and grass, amounted, for Great Britain, to 31,855,000 acres, exclusive of heath and mountain pasture and of woods and plantations; only a very small proportion of this quantity, viz., 71,774, or about one-fifth per cent., being planted with hops; and of this acreage nearly 65 per cent. is in the county of Kent.

Such being the case we may, I think, fairly assume that, whatever the reasons may be which have influenced the choice of locality, whether geological formation, climate, or local associations, the conditions which obtain in Kent are especially suitable to the cultivation of hops. We will therefore briefly consider the geological strata of Kent, in connection with the hop-growing districts.

And as a preliminary to so doing, I will quote a few lines from LANCE's "Hop Farmer" with respect to the soil which, in his estimation, is best adapted to hop cultivation. He says:—"The swelling tubers and the lateral shoots of the rootlets go on best when the soil is open and has been well tilled to a good depth; and although it will be seen that the hop is grown in almost every soil, yet it only succeeds in full perfection where there is a clayey or calcareous loam or open marly subsoil." And again. "In all instances where there is a proper proportion of carbonate of lime mixed with the soil it gives fertility to it, for the production of nearly all sorts of agricultural crops; and it is found also to act bene-

ficially in the growth of hops; for wherever the hop flourishes in a superior manner, there is found the carbonate of lime either as a marl mixed up with the soil or as calcareous sand."

The East Kent district, being proverbial for producing the finest quality of hops, we will consider the geology of that part of the county first. Mr. CHARLES WHITEHEAD, who is himself a hop-grower of some experience, thus describes it:—"From Chatham to Faversham, and from Faversham nearly to Canterbury, extending for some miles, chiefly below the London, Chatham, and Dover Railway, the finest hop land in England is situated, upon various clays, loamy clays, and loams of the Thanet beds, the Woolwich and Reading beds, and the Oldham beds, which crop up and over-lie the chalk on this backbone of Kent; as the chalk appears again with a surface of loam, gradually decreasing in thickness, the hop-land becomes less valuable, and at a short distance from this point, hops are not cultivated at all until, *longo intervallo*, the bastard East Kent district begins, where the hops produced are of inferior quality, as compared with genuine East Kents, and are grown upon useful, somewhat heavy, soils upon the belt of gault, alternating with the Folkestone beds, which intervenes between the chalk and the weald clay between Lenham and Ashford. Below Canterbury there is a district extending from Chilham to Barham Down, east, where hops of first-class quality are grown upon loams of a somewhat sandy character on the chalk.

"The crops in this locality are not so large as those grown on the deeper, richer loams and brick-earth near Faversham and Sittingbourne, and the plants will not take such long poles, but their quality is super-excellent. Bastard East Kent hops form a line of demarcation

“ between East Kents proper and Mid-Kents, and rank next
 “ before the latter, which are grown for the most part upon
 “ the soils of the lower greensand formation ; the loams
 “ and clay loams, and hassocky detritus of the Hythe beds,
 “ the Folkestone beds, and Atherfield clay, between the
 “ chalk and the wealden formation, running from Lenham
 “ nearly to Tonbridge.” LANCE describes the soil of the
 district round Canterbury as “ a sandy loam resting upon
 “ a sub-soil of chalk, and, in places, mixed with the clay
 “ and alluvial matters from the river, but in general it may
 “ be considered as a deep sandy loam resting upon the upper
 “ chalk.”

The soils of the Mid-Kent district, comprising chiefly
 the upper and lower greensand and gault formation, is
 described as a “ loose calcareous sand, with interspersions of
 “ clay and a stratified lime-stone, locally called the ‘ Kentish
 “ ‘ Rag-stone’ ; but the stone is much varied in its nature,
 “ passing from a greensand stone to a close calcareous
 “ marble. In the loose nodules or debris of this stone, the
 “ hop ramifies its roots and obtains its food of moisture,
 “ extending, in some instances, 8 ft. deep, and, when the
 “ soil is open, even to 10 ft.”

Mr. WHITEHEAD describes the other districts of Kent as
 follows :—“ The Weald of Kent is a very large hop pro-
 “ ducing area, lying between Edenbridge in the west, to
 “ Ashford in the east of the county, extending southward
 “ to Tonbridge Wells, Lamberhurst, and Hawkhurst, upon
 “ the borders of Sussex.

“ The soils are argillaceous clays, sandy clays, more or
 “ less tenacious and stiff, with occasional patches of loam
 “ and alluvium, upon the weald clay, the Tunbridge Wells
 “ sand, the Ashdown sand, and the Wadhurst clay, the
 “ three last being varieties of the Hastings sand. Most of
 “ this area yields large crops in kindly seasons, and more

“hops are grown per acre, upon an average, than in the East or Mid Kent. A ton an acre on short poles is not an uncommon crop, and even 30 cwts. are occasionally grown per acre, an amount not dreamed of in the philosophy of the planter in any other part of the county.

“The West Kent hop district is comparatively small, extending from Westerham upon the west, on the borders of Surrey, to a little beyond Sevenoaks, and running in a northerly direction to Chelsfield, Orpington, and other neighbouring parishes. The best land is upon the gault of the upper greensand, of which a narrow strip alternates with a somewhat broader strip of various soils of the lower greensand, cropping up between the chalk and the weald clay. The gault is not wider in any part than five miles, and the Atherfield clay and Sandgate beds of the lower greensand, running parallel with it, are in no case more than seven or eight miles wide. Hops of very good quality are produced here, as well as upon the loams and clay loams of the London clay and brick earth which overlies the chalk in the more northerly part of this district.

“North Kent is the last Kentish division, which embraces the large expanse of chalk hills between Farningham and Rochester. Its acreage is but small and unimportant, though the extent of the district is very wide. Being for the most part very poor, stiff land, it is only in a few places, where the marls on the chalk are somewhat less surly and untractable, that hops can be profitably cultivated. In some spots, as at Cobham, Ash, Southfleet, and Dartford, there are small outcrops of Thanet sand, whose clay loams suit hops admirably.”

It will be gathered from the foregoing description, that although hops are cultivated upon various soils, it is nevertheless essential to their successful cultivation that there

should be sufficient depth of good loam resting upon a porous subsoil such as chalk, as in East Kent, or sandstone and limestone, as in Mid-Kent.

And if we pursue the cultivation into the other "hop-growing counties," we shall find the same general characteristics prevailing. In Surrey, for instance, we have the same formation of upper and lower greensand lying between the range of chalk hills on the north and the weald clay or Hastings sand on the south, extending from the borders of Kent at Westerham on the east, to Farnham on the west; and again extending in a southerly direction, and embracing the hop-growing district of Hampshire as far as Alton and Petersfield.

This Vale of Alton is described as a "a continuation of a happily mixed soil, a good holding land with plenty of calcareous matter, and resting on a subsoil of chalk marl, or the lower grey chalk;" and Mr. WILKINSON, in his paper on farming in Hampshire, in Vol. XXII., 1st Series, of the "Royal Agricultural Society's Journal," writes, that "this malm is suitable for hops, or indeed for any crops requiring a strong soil, not so stiff and tenacious as the preceding gault clay, falling into a fine powder on exposure to the air, running into the fissures of the free-stone rock, filling them with a rich unctuous mould, into which the roots of the hop penetrate 20 ft. deep."

It may be noticed, in passing, that the hop is extremely partial to those geological formations where its roots can penetrate to a great depth amongst the crevices of rocks, as is exemplified above, as well as in that part of Mid-Kent lying on the hang of the ragstone hills from Linton to the Suttons, a district especially famous for the production of choice hops, and generally well favoured with regard to crop.

Mr. RUTLEY, in his prize essay, says that hops "are

“capable of being grown to perfection upon varieties of soil ;
 “but deep and dry soils with porous subsoils are the
 “best adapted.”

All authorities agree, however, that the subsoil must be well drained, either naturally or artificially ; and speaking generally, a soil which requires the latter is ill adapted for hops, as on wet soils the plant will soon decay, and the expense of grubbing and replanting is of too costly a nature to be indulged in frequently.

The grounds which are noted as having been the greatest number of years in plant (some of them having stood for more than 100 years) are, I believe, all to be found situated on the ragstone formation.

As an example of the varieties of soil upon which good hops may be grown, I may mention an instance of an enterprising planter, who, a few years ago, raised a large plantation on lands a few miles south of Canterbury, and at an altitude of between 400 and 500 ft. above sea level upon a loamy sand with a chalky subsoil, grew, upon a part, a ton per acre, beautifully clean and fairly conditioned, and an average crop of 12 cwt. per acre, a great portion being Goldings.

It should be remarked that certain kinds of soil are best adapted to certain varieties of hops. For instance, the deep “moulded and stone-shattery soil upon the greensand or “ragstone,” and the deep light loams on the chalk formation will grow the best sorts, such as Goldings ; while the alluvial soils near streams and rivers, the wealden clay and other retentive subsoils, will only grow the coarser varieties of hop, such as the Grape, the Jones, and the Colegate.

It is in the selection of the kind of hop to plant upon the various soils that great judgment is required on the part of the planter in order to secure success. Again,

although geological conditions to a great extent define the limits of hop-growing, it must not be imagined that hops will flourish everywhere within those limits. This is clearly shown by the platty or uneven nature of the plantations as represented on the map here shown, which comprises about 40,000 acres, prepared for the purpose of illustrating the general geological formation of the centre of the Mid-Kent district.

This map is drawn to a scale of 6 inches to the mile, and the hop plantations are represented by the parts coloured green, while the three principal geological formations, viz., the greensand, weald clay, and alluvium, are distinguished by separate colours. It will be seen that, although the plantations upon the greensand formation are in larger blocks, and comprise together a larger area than those on either of the other formations, nevertheless, on the alluvium, the cultivation is carried on to almost as great an extent, and that even on the weald clay plantations are to be found.

Another map to the scale of 2 inches to the mile represents a district comprising 44,000 acres in East Kent, and embracing about 1,500 acres of hops.

This plattiness of cultivation, or unevenness of growth, is accounted for by the fact that so much depends upon the depth and quality of the surface soil and its chemical composition, as well as upon the nature of the subsoil; so that while one field may grow large crops of good hops for many years in succession, the surrounding fields may be capable of growing only inferior sorts, or may be quite unsuitable for growing hops remuneratively at all. For, as Mr. WHITEHEAD remarks, "unless there is a proper amount of superficial soil and a suitable arrangement of substrata in land designed for hops, and unless its soil contains a due quantity of potash, phosphate, silica, lime, and other mineral constituents, it

“ will not pay to plant hops upon it, although it might be considered, from its geological surroundings, perfectly adapted for their successful cultivation.”

With regard to geographical situation and climate, I need only remark that, judging from the fact that the great bulk of the hop land lies in the southern counties of England, only a very small proportion of the acreage lying above the 52nd parallel of latitude, we may assume that the temperature which prevails in this situation is more suitable to the growth of hops than a colder climate; and the delicate nature of the plant and its susceptibility to atmospheric influences will sufficiently account for this fact. Shelter from sea winds is absolutely necessary, and although in a few instances hops are grown upon high altitudes, they will rarely, if ever, succeed in situations exposed to high winds.

As to the extent to which local associations may effect the limitation of the area under cultivation with hops, there are several reasons which undoubtedly militate against the introduction of hops into new districts, remote from those where they are now well established.

In the first place, the expense which must be incurred in erecting kilns or oast-houses and other buildings suitable for curing hops, in raising the plantation, and in providing poles yearly, &c., would be considerable, and the success of the undertaking being to a great extent problematical, few persons could be found sufficiently speculative to embark on such a risk. Then again the course of cultivation being beyond the ordinary routine of farm work and requiring a certain amount of skilled labour, it would be necessary to procure the services of such men educated in the hop-growing districts, and by the offer of higher wages to induce them to leave their present situations.

In describing *the method of cultivation* I will, as briefly

as possible, enumerate the various acts of husbandry which are performed, first, in raising a plantation, and, secondly, in the annual tillage, &c., with an estimate of the average cost of each operation.

In planting, the choice of situation is naturally the first consideration with the planter; but, as may have been already gathered from the foregoing remarks, there are so many elements which constitute a favourable site, having regard to soil, aspect, and elevation, and so various are the opinions of planters upon this point, some preferring one aspect and some another, some low, sheltered, lands and others more exposed situations, that it is difficult to offer any general directions.

Mr. RUTLEY says "a field sloping to the north is the best," as being screened from the south-west winds and having more hours of sunshine than a south one; but, nevertheless, on the southern slope of the range of hills which parts Mid-Kent from the Weald, some of the best hops in that district are grown.

Tradition respecting the capabilities of certain fields, convenience of situation with regard to the oast-house, and various local circumstances, will greatly influence a planter's choice of site. "Old pastures or apple or cherry orchards," Mr. WHITEHEAD observes, "are eminently suitable for planting with hops (as there are rich stores of 'humus' in the soil as well as mineral ingredients necessary for the hop plants). Failing these, whose situation is admirably adapted for hops—as our forefathers always planted their fruit trees on the very best land and in the most sheltered spots,—ordinary land of the best quality then is taken."

Whatever land is chosen, a deep tilth is required, and trenching by hand or deep ploughing and subsoiling is therefore necessary. The former is considered the better plan when well done, but the latter being cheaper and more ex-

peditious, is, I think, more generally practised; of course the nature of the soil will in many cases determine which course to adopt.

The success of the plantations in a great measure depending upon how this operation is performed, great care should be taken that it is done thoroughly, and that any wet or springy places are well drained.

Harrowing and rolling are then necessary to make the ground level and fine, when it will be ready for setting out and planting.

The hills—from 1,000 to 1,200 per acre—are set out at equal distances from 6 ft. 9 in. to 6 ft. apart, either square or triangular in form, according to the judgment of the planter and the sort of hop proposed to be planted, those which grow more bine being planted at a greater distance.

Setting out the hills should be done with great accuracy, for the sake of the future cultivation. After “setting out,” the holes are dug about 1 ft. square and 10 in. deep, and either “cut” or “bedded” sets are planted; most planters fill in the holes with well rotted manure and good mould, which, in the case of bedded sets being used, should be trod evenly and gently on to the roots. These “sets,” as the young plants are called, are cuttings from the grounds already in plant, taken when the plants are dressed or pruned in the spring; and they are either planted the same year where they are to remain, in which case they are called “cut sets,” or they are planted in nursery beds, and removed to their destination in the course of one or two years, and in this case they are known as “bedded sets.” As a general rule, the latter are preferred, for a plantation can be raised quicker by this means, the plants being stronger, and they will generally produce a crop of 4 or 5 cwt., and I have known even from 12 to 13 cwt. per acre grown the first year

from hops planted in the spring. Great care should be taken that the cuttings are true to variety and from good healthy stock, also that those taken from the male stock are kept distinct. Bedded sets are either raised by the grower himself or are purchased. The cost of plants varies from 4s. per hundred to 25s. for choice sorts. WHITE's early goldings and FUGGLE's goldings and bramblings when they first came out, were sold at from 20s. to 25s. per hundred. Some planters, by careful selection and attention to the cultivation, have made a reputation for supplying good and pure bedded sets, and by the prices which they are thus enabled to charge, they are well remunerated for their trouble and outlay.

Two bedded sets per hill are generally considered sufficient, especially if the sets are well grown, healthy, and strong, and in some cases even one set per hill has proved enough.

It may be convenient here to describe the principal varieties which are generally planted, and for this purpose I will again quote from MR. RUTLEY, MR. WHITEHEAD, and other writers:—

“*Goldings*, which are reputed to have taken that name
 “several generations back from a gentleman of the name of
 “GOLDING who first raised them, and whose descendants,
 “some of them, are now hop growers in the county of Kent,
 “are undoubtedly the finest, richest, and most valuable of
 “any grown, varying in quality, like all other varieties,
 “according to the soil on which they are grown; the soils
 “best adapted being deep rich soils on calcareous subsoils.”

“The percentage of essential principles, in well-managed
 “samples of these hops, has been demonstrated by analytical
 “chemists to be larger than that of any other English
 “hop.”

“The strobiles of this variety are about the size of a

“ Kentish cob nut, somewhat round in shape, and of a pale golden colour. They do not grow in clusters like the grape, but more singly.”

“ As varieties of the golding, there are Bramlings (so called from a place in East Kent, near Canterbury), which come to maturity about ten days before the ordinary goldings.

“ *Bramlings* do not possess the fine character or quality of the old golding hops, but they are useful to begin picking with, and every planter should have, say, one-twelfth of his acreage planted with Bramlings, or WHITE’S early goldings, which latter, though of superior quality, are more shy bearers and more liable to blight and mould. Buss’s goldings and FUGGLE’S goldings are somewhat coarse in matter of quality ; they are good croppers, and come to pick rather later than the old-fashioned goldings.”

“ *Canterburys* partake somewhat of the nature of goldings, not so thick or so strong a hop when dried, but equally fine, if not more so, in flavour ; are well adapted for the brewing of fine ales for keeping ; they require the same description of soil to be grown on as goldings, run rather more to bine, and the cones are smaller.”

“ *Grape* hops rank next in quality to goldings. There are many varieties, or sub-varieties, of these valuable hops, which have been modified by selection or changed in some characteristics by differences of soil or climate. All have the peculiarity of the cones growing in clusters ; all are larger than goldings, though some kinds are smaller than others, and in this respect have been improved, as one fault in the flower cones of the old-fashioned grape hops is that they are too coarse, larger, and have a thick strig, which shows plainly in the samples.

“ Whitebine grapes, for instance, grown to a great

“ extent in Mid-Kent, and WILLIAMS’ whitebine grapes and
 “ the grape greenbine, cultivated in Surrey and Hampshire,
 “ grow finer and of better quality than the original grape.

“ COOPER’S whitebine is also an improved kind of grape
 “ known in the Worcestershire and Herefordshire hop-
 “ yards.

“ Grape hops of all descriptions are grown in the Wealds
 “ of Kent and Sussex, for a main crop, upon short poles
 “ from 10 to 12 ft. in length. They are better croppers
 “ than goldings, and are not nearly so liable to be attacked
 “ by mould.

“ *Jones’ Hops* are cultivated to a great extent in Kent
 “ and Sussex, more particularly in the Weald of Kent.
 “ This is a somewhat coarse hop with large strobiles, and is
 “ a good cropper upon heavy lands.

“ It is grown largely in Worcestershire and Hereford-
 “ shire, and in Surrey and Hants, and yields heavy crops
 “ upon short poles from 8 to 10 ft. in length. In this
 “ respect it is a useful hop, as it takes poles which would
 “ be otherwise of no use, except for young hops or to burn,
 “ and the expense of poling is therefore much lessened.

“ *Colegates* are fast being eliminated from the hop plan-
 “ tations of Mid-Kent. East Kent growers will not con-
 “ descend to grow them upon any consideration whatever.
 “ They are mainly grown in Sussex and the Weald of Kent,
 “ where they yield wonderful crops in kindly seasons; and
 “ come late to pick, growing and sending forth hops when
 “ other sorts have finished their work. The late Mr. SMITH,
 “ of Wick, in his Worcester prize essay, given by the Royal
 “ Agricultural Society of England, wrote that ‘ this sort of
 “ ‘ hop is a hardy variety and a heavy cropper, but subject
 “ ‘ to blight and repudiated by the brewer as a rank bad hop,
 “ ‘ yielding a most unpleasant flavour to the beer.’ Poles
 “ of from 12 to 14 ft. are used for these hops, which have

“small strobiles, smaller than those of the golding hop, grow in clusters, and have, as Mr. SMITH justly remarked, “a villainous odour.”

These five are the principal varieties grown in Kent and Sussex; there are other varieties, but as these resemble, more or less, those already mentioned, it will not be necessary to describe them.

Plantations are generally so arranged, as to their quantities and kinds, that the picking may be continuous, beginning with the earliest ripening sorts, with sufficient acreage of each other kind to follow, that the pickers may be employed until the latest to gather are ripe.

As to the best season for planting, some planters prefer October and November, and others February and March.

One objection to planting late in the spring is that, should a dry summer follow, many of the plants may die. If “cut” sets are chosen, the latter are, of necessity, the months for planting, as the old plants are dressed at that time, and the cuttings taken.

After planting in October or November, nothing is done to the sets until March, when the dead tips which project above the ground are cut off, and fine earth is raked over the hill centres. Some planters put no stakes the first year, but simply tie up the bines in a knot; others put one or two short poles or stakes, and grow a few hops; but it is generally considered better not to stimulate the plants so early, for fear of weakening the stock and stunting their after growth.

No manure is required beyond that put into the holes, in the case of old meadows or orchard land, but if arable land has been planted, a slight dressing is advisable.

The practice of growing mangold turnips or potatoes in the alleys between the hop plants cannot be too strongly condemned, as “most land has quite enough to do to furnish

“ organic and inorganic matter for the hop plant, without “ being required to provide food for supplementary crops,” and this penny-wise, pound-foolish system is now generally abandoned by all good managers.

With regard to the male plant, much difference of opinion exists, but both Mr. RUTLEY and Mr. LANCE are in favour of planting some in every garden, and the latter remarks, “ in planting, attention should be given to planting the male “ plants one in every hundred at the least, that is every “ tenth hill should have a male plant ; some of them should “ be placed on the south-east and south-west sides of the “ field, as the wind generally blows from those quarters in “ the blooming season ;” GILBERT WHITE, too, in his “ History of Selbourne,” points out that “ it is most desirable “ to have some male plants purposely in every garden, that “ their farina may impregnate the blossoms. The female “ plants without their male attendants are not in their natural “ state, hence we may suppose the frequent failures of crop so “ incidental to hop grounds. No other growth cultivated by “ man has such frequent and general failure as hops.” This latter remark is quite true, but modern hop-planters evidently doubt such failure in the crop being attributable to the fact of their not having a sufficient number of male plants in their grounds, as “ not only is little attention paid “ to securing their presence, but they are in many instances “ remorselessly grubbed up, and the female plant doomed to “ single blessedness.” One of the most successful hop growers in Kent, however, has invariably adopted the plan of having a few male plants in each six or eight acres.

The sets having been planted, little more is required to be done beyond keeping the ground clean and well stirred, and the expense of raising the plantation may be summarized as follows :—

AVERAGE COST PER ACRE OF ONLY RAISING PLANTATION.

	£	s.	d.
Trenching per acre	6	0	0
Harrowing, &c.	0	5	0
Manure (40 loads at 4s.)	8	0	0
Setting out hills	0	2	6
Digging holes and filling with manure	1	5	0
Plants (say 2,400 at 4s.)	4	16	0
Planting	0	8	0
Nidgetting and summer cultivation .	2	0	0
Stakes or poles and labour	1	10	0
One year's rent, tithes, and taxes .	5	0	0
	29	6	6
If the ground is ploughed, and subsoiled instead of trenched, deduct . . .	3	0	0
Total per acre	£26	6	6

If any draining be required the cost must of course be added to the above, which is only an estimate, and will be subject to variations according to circumstances and the rent also will vary according to locality.

To proceed with the annual course of cultivation in established grounds, the first operation is to manure the ground previous to digging. The manures used are various, according to the nature of the soil, and the judgment of the planter; but the principal in general use are farmyard fatting manure at the rate of 20 or 30 tons per acre, costing from 5 to 8 shillings per ton; woollen rags at the rate of 1 or 2 tons per acre, costing from £3 10s. to £5 5s. per ton; shoddy, 1 to 2½ tons per acre, at from £3 to £5 5s. per ton; or fur waste, from 8 to 15 cwt. per acre, at from £5 to £8 8s. per ton. Fish, such as sprats, fivefingers, and

mussels, are sometimes used at a cost of from £5 to £7 per acre.

Hops, as shown by Mr. NESBIT, in his experiments, the results of which were given in the Royal Agricultural Society's Journal for 1846, take from the soil very large quantities of mineral elements of fertility, such as silica, lime, potash, phosphates of iron, and phosphoric acid, and magnesia, and it is therefore important that the plant should be manured highly in order to replace these elements, especially having regard to the fact that almost the whole of the produce is exported from the farm.

With regard to manures, Mr. RUTLEY says:—"A change of manure every time the hop ground is manured, I have found by experience to be good, constituting a mixture of manures in the earth." And again, "He finds there is no manure better adapted to every variety of soil than good farmyard dung, especially when beasts have been fed with oilcake or corn."

Woollen rags, he says, "are a lasting manure, but are more useful and decay sooner on dry than wet soils. Shoddy and sealskins are more active manures than woollen rags but not so lasting, but like them, are better adapted to dry soils than wet or stiff strong soils. All these are better adapted to the Kent ragstone than any other soil I know of."

After the manure has been put on and spread, the ground is dug with a four-pronged spud. In some cases, through scarcity of labour or for other reasons, ploughing is resorted to; but this is considered a nondesirable substitute for digging, as it is liable to tear or cut the roots of the hop plant, and it is not adopted to any extent. A large hop grower thus writes respecting ploughing hop land:—"Since the introduction of ploughing, planters are more independent of casual labour, which was often bad in quality

“ and expensive. Although I plough occasionally, and that
 “ only in fine weather when the land will bear horses, I much
 “ prefer digging. The saving by ploughing is very trifling, if
 “ any, when we consider the cost of digging, which, on an
 “ average, is about 20s. per acre.” Twenty-two shillings
 would, I think, be nearer the mark.

After digging, the next operation is “ dressing ” the hills,
 as it is technically called, which consists of opening the
 plant centres, by removing the earth with a pronged hoe,
 and then cutting off the dead bine and fibrous growth level
 with the ground, and again earthing up the hills with fine
 mould.

It should be commenced about the beginning of March,
 when the ground is sufficiently dry, and completed not later
 than the end of the month. If “ dressed ” too early, the
 young fresh shoots are liable to be cut by the late white
 frosts, so prevalent in this month ; but the time of dressing
 must in a great measure depend upon the season. This
 process requires great care and attention on the part of the
 operator, who should be thoroughly skilled at the work, as
 the future well-doing of the plant so much depends upon its
 being properly performed.

Poling is the next work, and this is commenced as soon
 as the hills are dressed, and in some seasons, when the work
 is behind, even before.

Three poles are generally put to a hill, although in the
 case of some sorts of hops very strong in bine, four are used,
 and in other kinds or to weakly hills only two. The size of the
 poles, too, is adapted to the growth of each particular variety,
 over poling being fatal to success. Speaking on this point,
 Mr. RUTLEY says :—“ Large crops are grown sometimes on
 “ only two poles to a hill, from 20 to 30 cwt. per acre in the
 “ lower part of Kent and Sussex, and I once knew an in-
 “ stance of a ground of four acres, in the parish of Cranbrook,

“growing two tons per acre of 1,200 hills, on two poles to a hill; it was the great crop year of 1826. It is a wrong idea to think of increasing the crop by putting four poles to a hill, when it is often lessened by it. I have seen frequent instances of it, particularly among Golding hops in Mid-Kent. I was in two different grounds last year, both Golding hops, part of each being poled with three poles to a hill and part with two poles; and in each case there were most hops grown per acre where there were only two poles to a hill.”

Poles are an expensive item in the cost of hop cultivation. Of the sorts in general use, the best and most lasting are chestnut of from 12 to 14 years' growth, or larch fir, then ash, willow, and maple. Inferior sorts of woods such as oak, birch, beech, hazel, and white birch are also used, but principally when small poles are required and strength is not of so much importance. Dipping the feet of the poles in creosote, is now a general custom, and their duration is materially increased thereby, and the annual depreciation correspondingly lessened. The prime cost of new, good, well-grown 16 ft. poles of the best sorts, carried home, sharpened, and dipped, varies exceedingly, but may be taken on an average of years at from 35s. to 48s. per hundred; and the cost of furnishing an acre of 1,200 hills with such poles at the rate of $2\frac{1}{2}$ poles per hill will therefore be from £52 to £72.

In the case, however, of an old ground where the poles run from 14 ft. to 16 ft., the value of the poles, if in fair working condition, will average from £22 to £30 per acre, and the annual cost of replenishing such a ground with new poles will amount to about £7 or £8 per acre, after allowing for the poles taken out.

Where cheaper kinds or smaller poles are used, although the first cost is much less, the annual depreciation will be

nearly the same as in the best classes, as a larger number will be required; and from £6 to £8 may therefore be taken as a fair estimate of the annual expenditure required to keep an acre supplied with its proper complement of poles.

The cost of poling and sharpening down is from 1s. 6d. to 2s. per hundred hills, or 18s. to 24s. per acre.

While speaking of poling, allusion may be made to a system lately patented by Mr. COLEY, called "The Hop-vinery System." Briefly described, it consists of two standards to each hill, about 13 ft. high, which are braced together and instead of being taken up annually, as in the ordinary course, are allowed to remain as fixtures; in each of these standards, at about four feet from the ground, a staple is fixed to take the pointed foot of another pole, which starting from this point is carried to the top of the corresponding standard at the next hill, upon which it rests secured by a wire fork. The advantages claimed by the inventor are—1st, a greater security against winds, the poles being firmly secured together and the hop tendrils prevented from lashing each other; 2ndly, a better and more even sample, by reason of the clusters of hops hanging more distinctly, being more systematically exposed to the sun and air, and therefore developing better and ripening more evenly and 3rdly, an annual saving in the cost of labour in poling, and in the wear and tear of the poles.

Planters generally have not adopted this system, although 3,000 acres have been so poled; the first cost, the care required in working the cultivation, and the prejudice inherent in farmers, as a class, probably acting as preventives.

After the hops are poled, which should be done by the end of April, they soon require tying. But before this is done, the rank and pipy vines, which are not so pro-

ductive as the fine but less luxuriant, are pulled out. Tying is performed by women, except in forcing seasons, when men are employed to keep pace with the growth of the plant, and the usual plan is for women, jointly or singly, to take so many acres to tie as they can manage. "A woman, with a family of young girls to assist her, will take from 4 to 5 acres, single women about 2 acres." Care is required in selecting the best bines, and the cost of a man to look after the tyers and see that they do their work properly is not thrown away, so much depending upon the selection of those bines which are the most likely to be productive, and upon the proper complement being furnished to each pole. Rushes are used for tying, as they yield readily to the tender growing bine.

When the bines have grown out of the reach of the women, such bines as show signs of falling away are tied by means of folding ladders. Clearing out the fresh green shoots at the foot of the poles, and earthing the hills, complete this part of the cultivation, which is generally finished by the first or second week in June. The cost of tying, clearing out, and earthing is about 16s. per acre. This is exclusive of ladder tying, and the general supervision which will be required in replacing bines of which the heads are broken by the wind or by accident.

Horsehoeing, or nidgetting, as it is locally termed, is the mode of summer cultivation almost universally adopted, the object being to get a good deep, fine tilth, and so admit air and warmth to the fibres and roots, and to clear the ground of summer weeds. On some soils, when a horse cannot be used, hand cultivation is resorted to, and the land is dug in the summer, but this is very rarely done. Besides nidgetting, which will be done about eight or ten times all over during the summer, the ground close to the hills which is not touched by the nidget, must be hand cultivated, either by

digging with a spud or chopping with a three-pronged hoe. The expense of nidgetting is from 40s. to 50s. per acre, and of digging round the hills and chopping from 6s. to 8s. per acre.

Summer manuring is adopted when the bine requires stimulating, and rape dust at from 10 cwt. to 1 ton per acre is often hoed or dug in round the hills, or nidgetted in over the ground. Other manures, such as guano, nitrate of soda, and super-phosphate, are also used for this purpose, and, in some cases, especially in dry summers, farmyard dung is spread over the hills to keep out the drought.

Sulphuring, to prevent or stop the ravages of mould, and syringing, or washing, with soft soap and other washes, to cure a blight of flies or lice, are processes which, unfortunately, the planter is frequently obliged to resort to. Some planters, however, are too conservative in their ideas to indulge in these methods, and leave nature to remedy these evils, trusting rather to generous cultivation to enable the plant to grow out of a blight than to the adoption of remedial measures, which are always costly and sometimes ineffectual.

The expense of sulphuring and washing will, of course, depend upon the extent to which the disease renders it necessary to go.

Sulphuring, the only known remedy for mould, will cost from 15s. to 20s. per acre each time it is done; the process consisting of throwing up powdered sulphur over the plants by a machine drawn up the alleys, and fitted with a revolving fan. About 50 lbs. are sufficient for an acre, and it should be applied before the burr is formed, or the brewers may object to the hops.

Washing is performed by squirting soap and water over the bine from a garden engine, the best mixture recommended by a practical writer being "100 gallons of water

“ and 20 lbs. of soft soap, with a quarter to half a pound of tobacco for one acre. The cost of once washing varies from “ 35s. to 45s. per acre.”

With the exception of occasional work, such as setting up poles which may be broken or blown down, I have now described the general course of cultivation up to the time of picking, and I will here give a summary of the expenses incurred on an average of years, up to that point, as the subsequent expenses depend entirely upon the quantity of hops grown :—

ESTIMATED ANNUAL COST OF CULTIVATION PER ACRE.

	£	s.	d.
Manure (dung or artificial)	7	0	0
Digging	1	2	0
Cutting and dressing	0	6	0
Poling	0	16	0
Tying	0	16	0
Pulling rank bine and earthing up	0	4	6
Ladder tying	0	5	0
Hoeing or digging round hills	0	8	0
Nidgetting and general cultivation until picking	2	0	0
Depreciation of poles, &c.	7	0	0
Stripping, stacking, and sorting the poles after picking and tying the bines	0	7	6
Cost of cultivation	20	5	0

To this must be added—

Rent, rates, and tithe, say	6	0	0
And interest on tenant's capital	4	0	0
		10	0
			30
			5
			0

	£	s.	d.
Making the total cost, irrespective of the crop grown	30	5	0
If sulphuring and washing are re- sorted to, add, say	5	0	0
	£35	5	0

As to hop-picking, the mode in which this is done is too well known to need any description. In the large hop-growing district of Mid-Kent large numbers of "strangers" (as they are called) from a distance are employed, as the resident population is not nearly sufficient for the purpose. Some idea of the number of strangers imported into the district may be gathered from the fact that in 1876 the special trains on the South-Eastern Railway alone conveyed 14,000 hop-pickers from London into Mid-Kent, and took back 16,352; and this without counting those who travelled by ordinary trains.

Hops are picked by the bushel, at from 3 to 4 bushels for a shilling up to 9 or 10, depending upon the nature and state of the crop, and two pence per bushel may be taken as the average cost of picking.

With regard to drying and the construction of the kiln used for that purpose, it will not be necessary to enter into a minute description.

Circular kilns of from 14 ft. to 18 ft. in diameter are most general, although some planters prefer square ones. The arrangement of the fires, flues, &c., also differs in accordance with the judgment or fancy of the planter, the object being to obtain a good current of dry, warm air through the hops, and to get rid of the reek or moisture, so that the hops may be thoroughly dried and yet not allowed to become tough by remaining too long upon the kiln.

As a rule, one bushel of hops to each superficial foot of hair is considered as much as can be dried properly at one time, and it is the custom to load the kiln twice in 24 hours. A 16 ft. circular kiln will thus take 200 bushels at a time, or 400 every 24 hours; and calculating the growth per acre at $12\frac{1}{2}$ cwt. of 80 bushels to the cwt., or 1,000 bushels, a kiln of the above dimensions will take two and a-half days to dry the produce of one acre; and supposing the duration of the picking season to be one month or 26 working days, one kiln would in that time dry the crop of 10 acres.

It is of the utmost importance that hops should be picked as soon as they are ripe, and the necessity of having oast accommodation upon a farm equal to the acreage of hops under cultivation is therefore manifest.

One kiln of average dimensions with corresponding cooling room for every 10 acres in plant may be taken as the minimum which should be provided.

An oast-house with the necessary storeage and cooling room will cost from £80 to £100 per kiln, which at 5 per cent. represents a rental value of from 8s. to 10s. per acre, upon the basis of the foregoing calculation.

The hop dryer should be a man of skill and judgment, as by either over or under drying, or by having too fierce or too slack a fire, the hops may be spoiled or their value seriously depreciated.

Packing, or bagging, is done as soon as the hops are sufficiently cool, a press being now generally used, although some planters still adhere to the old plan of having them trod into the pockets by the feet of men.

The total expense of picking, drying, and packing, including carriage to market, insurance, and commission, may be taken at from 30s. to 35s. per cwt.

With these items we come to a conclusion of the expense incurred in growing hops, and I will now consider the

question of the capital required by a tenant in taking hop land, and then endeavour to give some estimate of the return which he is likely to make. We have already seen that the stock of the best sorts of poles in fair working order will be worth on an average from £22 to £30 per acre, and of inferior poles from £10 to £18 per acre; and if we include the implements of husbandry, hop bins, oast tackle, and horses, we may fairly estimate the capital required for hop-poles and tackle, &c., to be from £25 to £30 per acre, say £27 10 0

To this must be added the cost of one year's

cultivation, which will be incurred irre-

spective of the crop grown, say 20 0 0

Rent, rates, taxes, and tithe 6 0 0

And picking, drying, &c., according to crop,

say 8 cwt. at 32s. 12 16 0

Making the total capital required per acre . £66 6 0

The following instances will give a very good idea of the amount of capital absorbed by stock and tackle on a hop farm.

Upon an estate of 728 acres situate in Mid-Kent, partly in the wealden district, of which 361 acres were planted with hops, and the remaining 367 acres were arable, meadow, and woodland, the stock and implements realized at auction, in the year 1874, £6,227, equal to £9 per acre, and the poles, manure, &c., £10,941, equal to £15 per acre, or a total of £17,168, equal to £24 per acre.

Or, taking the 361 acres of hop land separately, the poles represent a capital of £30 per acre; while of the stock and tackle, probably one-half, say £3,000, would be required for the hop land, representing an additional capital of £8 per acre.

Upon another farm of 137 acres the stock and implements and poles realized £2,478, or £18 per acre.

It should be noted that in the first of these instances the transfers took place in the year 1874, when hop-poles and other farming stock were exceptionally dear. After a series of bad hop seasons there is a considerable depreciation in the value of stock and tackle, and it is probable that had the transfers alluded to taken place this year instead of in 1874 or 1875, the hop-poles and hop tackle would have realized from 10 to 20 per cent. less than the amounts stated.

With regard to the *rental value of hop land*, much variation necessarily exists, according to the locality, capacity, and adaptability of the soil, and the traditions as to immunity from blight, and various other circumstances which can only be ascertained locally.

Certain districts, for instance, have a high reputation in the hop market, and the hops grown therein bear a favourite mark, and command a higher price in consequence; and again, the tradition concerning a freedom from blight will greatly enhance the letting value of certain spots.

The annual value of the hop lands in a large district in Mid-Kent, as assessed professionally for rating purposes, upon a survey in 1867, varied from 44s. to 105s. per acre; and in another district in East Kent, in 1864, for a like purpose, from 25s. to 80s. per acre; in both cases exclusive of the rent of the oast-house and buildings, which may be taken at from 10s. to 15s. per acre.

A farm in Mid-Kent, of which 63 acres are in hop cultivation, and the remainder meadow and arable land, has been recently let for £800. Taking the meadow and arable at 58s. (a high rent), leaves the rent of the hop land £7 10s. per acre.

For certain choice hop lands which are noted for withstanding blight and almost invariably growing good crops,

as much as £10 per acre has been given and maintained, but this is quite exceptional, and the average rental value through Mid-Kent may be taken at about £4 per acre.

With respect to the return which a planter may reasonably expect to make, it is very difficult to arrive at any general estimate which will fairly allow for the many varying circumstances which affect hop growing.

The uncertainty of the hop crop is almost proverbial. Its enemies are numerous and sometimes invincible, and from the time when the shoots of the plants first appear above the ground until the pocketed hops are delivered to the purchasers, the anxieties of the planter are unceasing. First the flea, then the aphis, and then the mould or red spider, may attack a plantation and ruin the crop; and even should it escape these visitations, a high wind when the hops are ripe may blow away half the crop or render it unfit for market. Then again good hops may be spoiled in drying, and even with good hops a planter is subject to a market more capricious and fluctuating than that of any other agricultural produce.

To show the extreme variations to which the growth is liable, I need only give the following statistics:—

In 1808	the crop was 13½ cwt. per acre.				
„ 1826	„	11	„		
„ 1850	„	11	„		
„ 1852	„	10¾	„		
„ 1855	„	12	„		
„ 1859	„	15	„		
While in 1823 only	1 cwt.	1 qr.	5 lbs.	were grown	per acre.
„ 1825 „	1	0	8	„	„
„ 1829 „	1	2	25	„	„
„ 1840 „	1	2	8	„	„
„ 1854 „	1	2	15	„	„
And „ 1860 „	2	0	17	„	„

With regard to prices realized, through the kindness of

a hop factor I am enabled to give the following table, showing the average prices during the last seven years, at the prices current during the selling season :—

YEAR.	AVERAGE CROP PER ACRE.	DISTRICTS.			
		PRICE PER CWT.			
		EAST KENT.	MID- KENT.	WEALD OF KENT.	SUSSEX.
	cwt.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1872 . .	9 $\frac{3}{4}$	4 17 6	4 5 0	3 0 0	3 5 0
1873 . .	8	8 0 0	7 10 0	5 0 0	4 15 0
1874 . .	3	12 10 0	10 10 0	9 0 0	7 0 0
1875 . .	6 $\frac{3}{4}$	5 0 0	4 0 0	3 10 0	3 2 6
1876 . .	6	10 0 0	8 10 0	7 15 0	6 15 0
1877 . .	6	5 13 0	4 17 6	3 2 6	3 10 0
1878 . .	9 $\frac{1}{2}$	4 7 6	4 2 6	3 5 0	3 0 0
Representing an average on the 7 years of . .		7 4 0	6 5 0	4 17 6	4 9 6

I am unable to give the average crop, per acre, grown in each of the foregoing districts, and the figures above given are an estimate of the average growth per acre of all England in each year ; but for the purpose of arriving at an approximate idea of the returns made by the planter, we will take the average growth of Mid-Kent at 7 cwt. per acre, and taking the selling price, as shown by the foregoing tables, at 125s., the gross sales per acre would be—

£43 15 0

From which deduct expenses

of cultivation . . . £30 0 0

Picking, drying, &c., at 35s.

per cwt. 12 5 0

————— 42 5 0

Leaving a profit of, per acre . . . £1 10 0

This estimate will be subject to certain allowances and contingencies, which it is impossible to calculate without a more detailed knowledge of the facts. For instance, the

selling prices quoted are the mean of the prices for each year, and as these vary sometimes as much as 60s. per cwt., the real average will depend upon the proportions of the quantities sold at the several prices; and should the quantity sold at the higher prices preponderate, the average would be correspondingly higher. Again, in consequence of bad years, the expenses of cultivation may have been curtailed, the tendency naturally being to retrench as much as possible when times are against the planter. Supposing, therefore, the average selling price to be 5s. in excess of that shown above—viz., £6 10s. instead of £6 5s., and the expenses per acre to have been reduced by £3, the profit and loss account, taking the growth at 7 cwt. per acre, will stand as follows:—

7 cwt. per acre at £6 10s. per cwt..	£45	10	0
Expenses of cultivation	£27	0	0
„ „ picking, &c., at			
35s. per cwt.	12	5	0
		39	5 0

Leaving a profit of £6 5 0
per acre, which upon a capital of £70 is equal to a return of about $8\frac{3}{4}$ per cent.

As an instance of an exceptionably profitable plot of hop land, I may mention a case in East Kent, where, in determining the tenant's compensation upon two acres of hop land taken by a railway company, it was proved that the returns for the seven previous years had averaged £84 per acre, while the cost of the whole expenses had been only £44 per acre, leaving £40 per acre for profit, and this, notwithstanding that during the seven years of the average there was one total blight.

The dissatisfaction which exists amongst the planters at the present moment affords, I think, sufficient evidence that, for the past few years, hop growing has not been generally remunerative; and in seeking a reason for this state of

things, I cannot help thinking that the large increase which has recently taken place in the plantations has, to some extent, contributed to this result. Lands not specially adapted to the growth of hops have been brought into cultivation, and as a natural consequence the yield per acre has been decreased, and at the same time the selling price reduced by the quantity of inferior hops put upon the market. It appears also a matter for the serious consideration of planters whether the modern mode of manuring does not seriously force the plant so as to deteriorate the quality of the fruit grown, and render it necessary to replant many years sooner than would otherwise be necessary, quantity being grown at the expense of quality. Likewise there may have been degradation or falling off in the mode of cultivation through insufficiency of capital or want of knowledge and energy on the part of the planter.

In the face of the foreign competition and the improvement which the Americans are making in the cultivation of their hops, the English grower cannot expect to realize very large prices in the future, except for the choicest sorts, and it behoves him therefore to direct his efforts to improved cultivation and to the selection of the best varieties, with a view to securing a good crop of the most marketable commodity.

As a writer to whom I am already indebted for much information upon the subject, remarks, "It hardly pays now to farm indifferent hop land or to grow common sorts. The time is fast coming when it will only pay to farm the land that is thoroughly suited for hop-growing and to grow the best sorts." Hop-farming, in fact, like all other farming, is just now undergoing a severe test, owing, no doubt, to a variety of circumstances, but in a great measure to foreign competition, and the difficulties of the labour question; but I cannot believe that the cultivation will cease to be general in those parts of England which are essentially

adapted to the growth, and while the planters are, as a body, men of capital and energy. And although they may never see "the good old times again when hops sold for £27 "per cwt., and when a visitation of aphides was looked "upon as a merciful dispensation of Providence," they may, nevertheless—where the soil is suitable, and energy and sufficient capital are employed—look forward with tolerable certainty to a fair return upon the capital invested.

This Paper has already far exceeded the length which I proposed at starting, and having now traced the cultivation of hops through its different stages, and arrived at an estimate of the results, I will, in conclusion, only apologize for what I feel to be the very imperfect way in which I have treated the subject, and for the length of time I have trespassed upon your attention.

Mr. J. R. BONNY (Member) had great pleasure in proposing a vote of thanks to Mr. TOOTELL for his very interesting and exhaustive Paper on hop growing—a Paper which, so far as it was possible to do so in writing, gave all the information necessary for growing hops; but to grow hops successfully required a species of knowledge that could not be imparted, and without this knowledge hop growing would be likely to prove a very expensive experiment to one unfamiliar with it from his earliest years. The Author had rightly described hop growing as a hazardous and uncertain occupation, and he might have added that the hop grower's anxieties were not over even when the hops were ready for the market, for there was always a difficulty in deciding how and when to dispose of the hops to the best advantage.

Hops grew best where the roots could get between the crevices of rocks. The characteristics of the soil in the Weald of Kent resembled those of the vine districts of the Rhine, and both the hop and the vine thrived best where

these crevices existed, and which were sought by the roots not only for food, but for warmth. He held in his hand a specimen of a hop plant grown 8 miles from the Institution. It had borne hops for the last five years, and had outlived even the last severe winter.

He might mention that he had four sons in Manitoba (the "Great Lone Land" described by Captain Butler), and they informed him that hops grew there, wild, in profusion and to great perfection. The soil was from four to eight feet deep—an alluvial deposit on rock—enriched by the prairie fires with large quantities of potash. With such a soil and climate Manitoba would some day compete, successfully, with other countries in hops as well as corn. The winter in those regions was severe—the temperature frequently falling 30 degrees below zero; but when the summer commenced, which was about the middle of April, there was no cessation, and the crops grew to perfection without a check. The uncertainty of hop crops used to make the hop duty the subject of a great deal of betting. He remembered hearing a very experienced hop grower say that he did not think he should pick his hops that year, for "it looked as if he should have so many." About a week afterwards, however, a glazed black coating on the leaf had taken the place of the beautiful green colour, and the advent of the "niggars" (the young of the lady-bird) to eat up the lice was earnestly looked for. Then came the mould, and the flea, &c., and high winds, just when the hops were ready to pick, and last, the most delicate process of all, the proper drying of the hops, as upon this depended the real success of the crop. This could only be done properly by men of the greatest practical experience.

He could not give intending hop growers better advice than to have nothing to do with hop culture until they had gone to school in a hop garden, and had learnt all that practical experience could teach them.

Mr. R. L. COBB (Member) begged to second the vote of thanks.

Mr. G. WEBB (Member) said that he was afraid he could not add much to what had been said in the Paper. He thought that, if many hop farmers had had the figures before them contained in the Paper, they would not have launched into so speculative a business. He had no hesitation in saying that the loss to the hop-growing districts was not less than two millions of money during the last two years.

He thought that Mr. TOOTELL had underrated the cost of the oast when he put it at 8s. He (Mr. WEBB) did not think it ought to be put at less than 30s. an acre, taking the land it occupied into account. He was personally of opinion that a judicious intermixture of male and female plants was desirable, although many growers of acknowledged experience doubted whether there was anything in the theory.

The author had referred to a district where a large crop of goldings was grown at an elevation of 400 feet. He fancied he knew the district, but he could not say he thought that, as a rule, it would be advisable to go to that height, especially with the Golding Hop—at all events he thought it was too high up for anything but an inferior hop.

Mr. A. J. NASH (Associate) said that he was a very small grower, but he thought that Mr. TOOTELL had put the cost of cultivation at something lower than he (Mr. NASH) had found it to be. In his district (Farnham) the ordinary expenses of the year could not be kept under £33 per acre, and then again the tithe was very heavy, never less than £1, and, in some cases, as much as 35s. an acre. He thought that Mr. TOOTELL had rather overrated the cost of the poles, which he found cost less than 30s. per hundred,

Mr. R. WATERMAN (Visitor) said that as he had been brought up among hop gardens, and had occupied the College gardens close to Maidstone for 11 years, he might be permitted to give his experience as to the cost of hop growing. He had found that on 60 acres the average outlay had been £3,000 a year, the cost of the hop poles representing £300 a year, or £5 an acre.

Mr. TOOTELL in reply said that his estimates were based upon an average for different parts of Kent. In some cases the average might be too high and in others too low. If there were an extraordinary high tithe, he thought it might be calculated that the rent and other expenses would be high in proportion, and he thought that the hop grower in such a locality realized a corresponding high price for his crop.

He begged to thank the Meeting for the kind way in which his Paper had been received.

The CHAIRMAN was sure that the vote of thanks to Mr. TOOTELL for his admirable Paper would meet with unanimous approval.

There seemed to be some difference of opinion as to the author's estimate of cost, but the same differences of opinion would manifest themselves with regard to estimates of any kind.

He believed that where hops grew to the greatest perfection anything else would grow, although hops, like every other species of agricultural produce, were subject to depression. What held good of other crops held good of hops—viz., the greater the care and judgment bestowed upon the culture, the better would be the result on an ordinary average of years.

The vote of thanks having been put and carried unanimously, the Meeting adjourned.

ON THE
DISPOSAL OF SEWAGE IN PARIS,
WITH ESPECIAL REFERENCE TO
THE SEWAGE FARMS OF GENNE-
VILLIERS.

BY W. ALLEN STURGE, M.D.

*Read at the Ordinary General Meeting of the INSTITUTION OF SURVEYORS,
April 28th, 1879.*

THE PRESIDENT IN THE CHAIR.

AMONGST the many international congresses which were held at Paris last year was one for the promotion of hygiene and sanitary reform, which was attended by many hundreds of scientific men from all parts of the world, including a large number of those who are best known in connection with the advancement of the science of health. Certain subjects had been selected for discussion, and on each of these subjects a committee of eminent specialists had been appointed to draw up a report for circulation amongst intending visitors, with a view to providing an indication of the direction which the discussions should take. One of the subjects chosen was the question of the pollution of rivers, which, in France as in our own country, is at the present time exciting a very lively interest, and which the authorities are determined to remedy by all the means in their power. Having had the good fortune to be present at the discussion on this subject, and also to form one of a party which visited the irrigation works of Gennevilliers, under the guidance of M. DURAND-CLAYE, the very able

engineer in charge of them, I think it may be of interest if I give some account of what I saw on that occasion, and of what I have since learnt of the progress of these works, before the Members of an Institution which, more perhaps than any other, has studied this particular aspect of the sewage question.

Without going minutely into detail as to the method of collecting and of carrying sewage in Paris, I may perhaps be allowed, first, to give a brief sketch of the measures which have been taken to relieve the city of its waste material, and of the means which were relied upon to render harmless and to utilize the organic excreta before any attempt was made to transfer them directly on to the land.

In Paris, as in London, very little attention was paid to the question of efficient drainage until within the last half century. Between the commencement of the present century and the year 1832 a certain number of new drains had been made, but there was a great want of method in their construction; they were not combined into one great system, they were not subjected to efficient surveillance, and the result was that from the sanitary point of view they were of little or no value. In 1832, in consequence of the cholera epidemic of that year, public attention was called to the matter, and a careful investigation was made into the state of the then existing sewers. From this time onwards the progress of the drainage operations was rapid, and in January 1874 356 miles of sewer had been constructed, leaving about 287 miles to complete the whole system. These sewers differ from those which have been constructed in London and other large English towns, in being relatively much larger, those of the smallest type being nearly six feet in height by three in width, with the view of allowing easy access by workmen, who are thus able to maintain

a thorough supervision of every part of the system, and without difficulty to clear out any sewer which may have become clogged by solid matter. All the larger types of sewers are provided with footpaths at the side of the bed of the stream, which instead of being egg-shaped, as is generally the case in England, is constructed on a much flatter model. The cleansing of these larger sewers is effected by means of waggons or boats (according to the size of the channel), provided with shields that can be lowered to the floor of the channel, so as to push before them any *débris* which may have collected. The drainage from the south side of the Seine is carried underneath the river by means of tubes having a siphon action, and after joining that from the northern half of the town flows in the "grand collector," as it is called, to Clichy, a few miles below Paris, where it is allowed to fall into the Seine.

I need not say much more about the means which have been provided for the carriage of sewage in Paris. The work has been constructed with great care and solidity, and I apprehend that, when completed, it will constitute a system of main drainage which will be second only to our own Metropolitan main drainage works.

Before passing on to the main subject of my Paper, viz., the *disposal* of the sewage, I will say a few words on the means by which the materials are collected together for whose carriage the sewers are provided. This is the weak point in the French system. Drain traps are practically unknown; the gutters in the streets communicate direct with the sewer conduits, and it thus results that emanations from the sewers are able to find their way into the streets and houses with perfect freedom. Any one with much experience of Paris will remember the unwholesome odour which frequently arises from the open gully holes in the streets; and I am able from practical experience to testify to

the foul air which often ascends into a Parisian house through the untrapped opening in the kitchen by which the house slops pass into the sewer.

The Paris sewers differ, however, from those of London in that they convey away a very much smaller proportion of solid organic matter. The French, as is well known, are strong advocates of the cesspool system, or, at any rate, have adopted it as the chief system for the disposal of excrementitious matter. This is in great measure due to the fact that, in the year 1820—at a time when sanitary science was yet scarcely born,—a law was passed rendering it obligatory for each house to be provided with an efficient cesspool. Up to that time in Paris, as elsewhere, badly-constructed and leaky cesspools were almost the only means thought of for the reception of sewage. The law of 1820 was passed to substitute carefully-built and hermetically-sealed cesspits in place of those already existing, and the system which was then inaugurated has remained in force ever since. Other plans have more recently been introduced, but they have been unable to take the place, to any great extent, of the cesspool system, for it appears that about 70 per cent. of all the houses in Paris are provided with large cesspits. Even in those houses where the cesspool system is not adopted, solid excrement is not allowed to enter the sewers, for in some houses (about $13\frac{1}{2}$ per cent. of all those in the town) moveable receptacles are provided, somewhat as in the pail system of Manchester, Rochdale, and other English towns; whilst in others receptacles with perforated bottoms are used, which allow all liquid matter to escape but catch the solids, which are dealt with in common with the contents of the cesspool. The cesspools are periodically emptied, by means of an exhausting apparatus, into large air-tight iron carts, and the contents carried away, to *depôts* where they are manufactured into manure.

As I said before, then, it is evident that the sewer water of Paris differs from that of London, and of most of our English towns, in containing a much smaller proportion of organic matter. I gather from an analysis quoted by Mr. TARGET, in his Paper on the Main Drainage of Paris, read before the Institute of Civil Engineers, that the quantity of organic matter in the Paris sewage amounts to 8,700 grains per cubic yard, and in the London sewage to 19,120 grains; the amount of inorganic material being 18,920 grains in the Paris, and 25,210 grains in the London sewage per cubic yard. Yet, that organic matter is present in the Paris sewage in sufficient quantity to produce all the evils of river pollution, if allowed to flow unaltered into the Seine, is evident from the following account, which I take from the report of a Ministerial Commission appointed in 1874 to enquire the matter. The report says: "Above Paris, during its course through the town, and as far below it as Asnières, the Seine presents a satisfactory aspect, at any rate upon superficial inspection. The improvement which has resulted from the construction of separate channels through the town for the conveyance of sewage is very manifest. Here and there a small thread of impure water flows from a manufactory, or from some suburban drain, but these threads are rapidly lost in the general mass of river water. Fish live freely in all parts of the stream; vegetation flourishes along the banks; the bed of the river is formed by white sand. During the hot weather of last summer, it was obvious to all that the condition of the Seine, in this part of its course, was relatively satisfactory.

"Below the bridge at Asnières this state of things becomes rapidly changed. On the right bank of the river the 'great collector' disgorges its contents. A considerable stream of blackish water flows from its mouth which spreads over the surface of the river in a parabolic curve, varying in

extent according to the nature of the weather. This water has a most repugnant appearance; it is charged with organic *débris* of every kind—vegetable refuse, corks, skins, hair, bodies of domestic animals, &c. It is ordinarily covered by a layer of fatty matter, which tends to accumulate on one bank or the other according to the direction of the wind. A grey mud, mixed with organic *débris*, collects on the right bank of the river, forming an alluvial deposit, which, at certain periods of the year, projects from the water, and is only got rid of by means of costly dredging operations. This mud occupies the whole bed of the river, and is the seat of an active fermentation which betrays itself by innumerable bubbles of gas rising to the surface of the water and bursting. For a great part of the year, and especially during the hot weather, these bubbles attain a very considerable size, being sometimes several feet in diameter. They burst through the mud, and carry to the surface black and fetid matters which are carried along by the stream. The passage of a boat raises waves of foam in its wake, and creates a veritable ebullition, lasting for several minutes. No living creature, no fish, no green herbage is found in the branch of the river most exposed to this contamination, and when in consequence of heavy storms the sewage material is carried further than usual, fish are killed in places where, as a rule, they are able to live. The water does not recover a healthy condition for many miles below the spot where the sewer enters the river.”

The foul condition of the river below the outfall of the grand collector may be judged from the fact that the amount of oxygen dissolved in the water is .534 per cent. in the neighbourhood of Paris, but that after the sewage water has become thoroughly mixed with the river water it sinks to half that quantity; at the same time the dissolved nitrogen rises from 21.1 grains near Paris to 46.5 grains

per cubic yard of water at Clichy. It was to remedy this state of affairs that the authorities first directed their attention to the possibility of sewage irrigation. The idea appears to have originated with M. MILLE, an eminent French engineer, who, as long ago as 1864, drew up a plan for distributing the sewage of Paris over the plain of Gennevilliers, and, in 1867, a department was organized with this special object in view, and was placed under the charge of M. DURAND-CLAYE. The years 1867 and 1868 were devoted to preliminary investigations into the chemical and other aspects of the question, after which the engineers felt themselves justified in commencing operations in earnest on ground which had already been chosen. And by the following year two steam engines, of 20 horse-power each, were engaged in pumping from 6,000 to 7,000 cubic yards of sewer water on to about 17 acres of land. So great was the prejudice against the employment of the sewage in this manner that the town authorities had the greatest difficulty in getting any one to undertake the cultivation of the land they had acquired for the purpose; but after a time some thirty or forty independent workers undertook to take charge each of a small plot of ground. The success, however, of the undertaking was so signal that before twelve months were over a considerable number of neighbouring cultivators asked to be allowed to have the sewage poured on to their lands, and the area under cultivation was increased from 17 to 54 acres. It was at this time that the war broke out; the plain of Gennevilliers was much exposed to the fire of the guns during the siege of Paris; the bridge over which the main conduit was carried from Clichy to the opposite side of the river, was blown up, the engine house was riddled with bomb shells, and everything was destroyed. So soon, however, as peace was thoroughly established and the Government placed upon a firm footing, the undertaking

was renewed, and by May 1872 irrigation was again established over the 54 acres that had been under cultivation prior to the war. Very shortly afterwards the municipality took the matter up more seriously, and voted £40,000 for the purpose of extending the works. A further sum of the same amount was voted in 1874, and with this help the engineers were able to replace the little engines with which they had begun their operations by two engines whose united strength amounted to 400 horsepower, and which pumped the sewage water from the great collector of Clichy, through two tubes, six feet and four feet in diameter respectively. An extensive system of conduits was built over the plain of Gennevilliers, and by the end of 1875 there were nearly 17 miles of such conduits. Corresponding with the increased facilities for distribution, aided as these were by the lessening prejudices of the proprietors of the soil, the amount of land under cultivation, year by year, grew larger. By the end of 1873 there were 217 acres under irrigation. In July 1875, this had grown to 313 acres. On the 1st January, 1877, the total area was 728 acres, and in June of last year, which is the latest return that I have been able to obtain, there were 914 acres subjected to treatment with sewage.

The quantity of water pumped on to the land is about 10,000,000 gallons per diem, being at the rate of nearly 11,000 gallons per acre. This is a large proportion as compared with the quantity used, per acre, upon the land in connection with most of our English sewage farms, for I find, from the very interesting and valuable Paper read before the Institution by Mr. BIRCH last Session, that at Warwick, only 3,225 gallons are poured on to each acre of land, on the average, per diem, and that at Edinburgh, where a larger quantity is used than is generally, I believe, considered desirable, not more than 7,740 gallons per diem are

employed per acre—a quantity much less than that used daily at Gennevilliers. The excess in the latter case is, however, almost, if not entirely, confined to the *water*; for, as I just now stated, the amount of organic matter in a state of solution in the sewage of Paris is so much less than is present in the sewage of an English town, that it is doubtful whether the daily task of purification assigned to the land at Gennevilliers, is as great as that which is given to the Edinburgh meadows. Mr. BIRCH pointed out, however, that if care be taken in the way in which the sewage is poured on to land, it is astonishing what a large quantity of foul water can be purified by a small piece of land. He stated that “its pores may be filled year after year with infinitely more dissolved manure than can possibly be made use of by vegetation, and the land will continue as productive and as capable of receiving sewage as ever. . . . Experience has proved that over-feeding with sewage for years has no ill effect, although land may be choked with it in one meal.” It was found by experiment that the land at Gennevilliers was capable of purifying as much as 14,000 gallons per acre per diem, if due care were exercised in the management of the irrigation. But the engineers had no wish to push their operations to this extreme point, it being quite certain that even at the present rate, although the sewage water is purified, it is by no means entirely utilized: that is to say, that though the whole of the organic matter is absorbed by the soil, it is impossible for all this organic matter to be taken up by the vegetable growth. In order to bring about complete utilization, they calculate that the sewage should be delivered over the land at the rate of not more than from 400 to 500 gallons per acre per diem.

The whole of the Paris sewage amounts to about 130,000,000 cubic yards per annum, which, at the above

rate, would require at least 150,000 acres for its complete utilization. It would be obviously impossible to place so large an extent of country under sewage cultivation all at once, and hence the engineers aim at present at nothing more than *epuration*, hoping to gradually approximate to complete utilization as time goes on. They reckon that for the former purpose it will be necessary to extend their operations over about 5,000 acres, and this area they hope to attain by taking in the whole of the Gennevilliers district, which contains rather more than 2,000 acres, and adding to it from two to three thousand acres of land in the neighbourhood.

The position occupied by the Paris municipality in reference to these works is very different from that of the English municipalities in most of the towns where sewage irrigation has been undertaken. In these the town has, as a rule, bought or rented an estate of larger or smaller size, and has undertaken its own farming operations. At Gennevilliers, on the contrary, the system pursued has been to induce independent cultivators to take the sewage for their land, the town of Paris acting simply as the vendor of the manure, and not in any more strictly agricultural character. It is, perhaps, scarcely accurate to say that it has been the *vendor* of manure; for so great at first was the prejudice against the scheme on the part of the cultivators that it has hitherto been necessary to allow them to have the water for nothing, and the town has been glad to dispose of it on these conditions. These cultivators are for the most part small market gardeners, and the area under irrigation is made up of a large number of plots, few of which are more than two or three acres in extent, many of them being much smaller. The value of the irrigated land has, however, so much increased that the cultivators in the immediate neighbourhood are beginning to appreciate the value of sewage irriga-

tion, and hence the obstacles to further progress are likely to be less than they have been hitherto.

As a sign of the change of opinion which is being wrought in the minds of the cultivators of that neighbourhood, I may mention that a few months ago they spontaneously offered to pay something for the sewage with which they are supplied. I do not mean to infer that this offer arose out of any feeling of disinterested generosity on their part; but it was made with a view to their getting some little hold over the town authorities, and of having a voice in deciding what quantity of sewage should be distributed over the land. Whilst the town was giving away its manure for nothing, it considered it was entitled to suit itself as to the quantity distributed; and the primary object in view being the epuration of as large a proportion as possible, it has been in the habit of pouring nearly as much water on to the land as it was capable of purifying; and this quantity, though not actually injurious to the crop, has often been greatly in excess of what the cultivators required for agricultural purposes. A scheme is, however, under consideration which it is hoped will meet the difficulty, and, by spreading the sewage over a wider area, will enable the authorities to supply to individual cultivators only such amount of sewage as they may wish to buy. Lying to the north of the Forest of St. Germain is a large tract of country, so sterile as to be at present scarcely worth cultivating. This tract, which is about 3,500 acres in extent, is State property, and by an understanding between the town authorities and the Government it could be at once placed at the disposition of the sewage engineers. I before stated that it would require not more than from five to six thousand acres to ensure the complete epuration of all the sewage of Paris. Hence then, if this tract were placed under irrigation, it alone would be sufficient to purify nearly two-thirds of the total quantity. This tract

would be leased by the Government to the municipal authorities, who would thus be their own farmers, and would be able to decide without reference to any one else, how much water should be distributed.

In this way the estate would act as a vast regulator, which would enable the town to supply independent cultivators with just such quantities of manure as they might require without interfering in any way with the regularity of disposal that would be essential to prevent an accumulation of sewage. Each day a certain quantity of sewage would be taken by the farmers at Gennevilliers, or elsewhere, and what was left over would be taken to St. Germain. There can be no doubt that, under a system like this, the market value of the sewage would rise rapidly, and that a large demand would be created. The engineers, in drawing up the plan for carrying the sewage to St. Germain, made arrangements for branch conduits to lands in the neighbourhood of the main canal, with a view to supplying the material to any one along the line who might wish to have it. These plans, however, have excited such opposition among the inhabitants that they will probably have to be dropped for a time; but this will be the less to be regretted, inasmuch as the intelligent and far-seeing Mayor of Méry-sur-Oise, a small town a few miles to the north, has requested that a conduit may be constructed to carry the sewage to a large tract of land, containing between 8,000 and 9,000 acres, which is under his jurisdiction. Though the quantity supplied to this area would be small in proportion to that poured over the municipal lands, as the Mayor would, of course, take only so much as he might think desirable for his land, it will be a great assistance to the engineers to have so large an additional tract to work upon; and there can be little doubt that, in a few years, the total area under

irrigation will be greatly increased by offers to buy the liquid by those very people who are now refusing to receive it for nothing. In this way a gradual approximation would be made to the complete utilization of the sewage, as well as to its complete epuration.

I will now speak of the agricultural results which have been obtained at Gennevilliers, and of the method adopted for spreading the water over the land. I gather from Mr. BIRCH's Paper, that in England, sewage farms generally consist of meadow land, and that the favourite crop is Italian rye-grass. At Gennevilliers, as I before said, the land is largely in the hands of market gardeners, and is chiefly devoted to the raising of vegetables and allied crops. As nearly as I can learn, out of the total amount of 914 acres under irrigation, about 700 acres are cultivated in this way, and a Commission, which was appointed in 1877 to report upon the results, gave them as follows :—

<i>Cabbages</i>	-	-	28 tons per acre.
<i>Carrots</i>	-	-	20 tons per acre.
<i>Beetroot</i>	-	-	48 tons per acre.
<i>Beans</i>	-	-	6 tons per acre.

In many instances, however, the yield is very much greater than is represented by these figures, for the Commission found that some parts of the land were yielding crops as follows :—

<i>Cauliflowers</i>	-	from 14 to 16 tons per acre.
<i>Carrots</i>	-	from 24 to 32 tons per acre, and even as high as 53 tons per acre.
<i>Cabbages</i>	-	as high as 56 tons per acre.
<i>Onions</i>	-	from 24 to 32 tons per acre.
<i>Potatoes</i>	-	from 12 to 16 tons per acre.

Thus the use of sewage on a sterile soil, like that of Gennevilliers, produces results twice or three times as great

as those obtained in ordinary unirrigated lands, and not inferior to those obtained in the best market gardens where water and manure are freely used, and brought at great expense. One of the cultivators of Gennevilliers gained the first prize for his vegetables at a show, open to all the gardeners of the department, and the quality of the products is found in nearly all cases to compare favourably with that of vegetables grown in an ordinary soil. The one exception is in the case of potatoes, which the Commission found to be at times watery and poor in quality. They point out that the best crops for lands subjected to very free irrigation are green crops, or root crops in the strict acceptation of the word, and that as a rule it is well to avoid plants which must flower or fructify before being gathered; because these latter, being processes of elaboration rather than of increase, require time rather than water or manure for their due performance. Nevertheless, here and there in the irrigated land, fruit trees have been planted, and have flourished very well, but it is at present rather too early to say how the crop of fruit from a fully developed tree may be modified by the new conditions under which the growth is taking place. An exception to the above rule is found in connection with ornamental flowers, which thrive so well that one of the best-known professional florists of Paris has abandoned all other gardens to grow his flowers at Gennevilliers.

In the case both of flowering plants and of fruit trees greater care has to be exercised in supplying the liquid than in connection with root and green crops, and there is much greater danger of giving an overdose. Their cultivation can, consequently, only be carried out on a large scale when the area under irrigation shall have been greatly increased. One kind of culture which has little place in England is found to answer exceedingly well at Gennevilliers—I refer

to the growing of plants for the manufacture of perfumes and liqueurs, which has been carried out on a considerable scale, as, for instance, mint, absinth, and angelica. Crops of this kind require less care than do flowers or fruit, the only precaution necessary being to suspend all irrigation for about a fortnight before the plants are gathered.

I have been unable to obtain many details relating to the cultivation of corn and grass crops on the irrigated land, because, owing to circumstances, the report of a Sub-Committee of the Commission appointed to investigate this particular part of the subject has not yet been issued. Crops of this kind, however, though exceedingly good, tend to disappear more and more, at Gennevilliers, in favour of market gardening. The average yield of wheat has been from 28 to $35\frac{1}{2}$ bushels per acre, rising, in some cases, to 55 bushels; of oats, from 35 to $44\frac{1}{2}$ bushels per acre; of mangel-wurzel, from 28 to 40 tons per acre. Five crops of green Lucerne grass were cut per annum, giving a yield of from 25 to 50 tons per acre. It is hoped that as time goes on, and the area under irrigation is increased, that the cultivation of grass and corn will be carried on on a much larger scale than at present. It is probable that the land at St. Germain and Méry, being much farther from Paris than Gennevilliers, will be given up to crops of this kind, and the separation of the farm land from the market gardens, which would thus result, would be a great convenience to the cultivators of both. The methods of treatment must necessarily be different in the two cases, and without some sort of classification it would be difficult to prevent the two interests from clashing. At the present time, when little or no classification has been made, and when all the various cultures exist side by side, complaints and counter-complaints are not unfrequently heard amongst the cultivators. One man has a crop requiring

a large amount of water; his neighbour would like much less, and so differences arise which tend to interfere with the popularity of the scheme. Doubtless time, the establishment of some sort of classification, and careful attention to the requirement of different parts, will remedy difficulties of this kind.

The process of irrigation is carried out as follows :--The water is pumped from the great collector at Clichy, through closed brick or concrete conduits, which are provided at intervals with traps or flood-gates in wood or metal. From these it flows into secondary branches formed by closed or open conduits, according to the distance they have to traverse—if short they are open, but if long the conduits are closed, to enable them to be carried under roads or over undulations in the ground. From these a network of open channels is carried over the land, whence the water runs into the furrows in which its final absorption by the soil is to take place. At first, all the conduits, except those of quite the largest size, were constructed on the open type at Gennevilliers, but they have been gradually replaced by closed channels, of which there are now no less than 17 miles in the peninsula, varying from 1 to $3\frac{1}{4}$ feet in diameter, built chiefly in concrete, at a price varying from 7s. to 35s. per yard, according to the size. The tubular system is preferred to the open, not only for the reasons given above, but also because it admits of the water being forced under pressure along the conduits, and thus prevents accumulation of solid matter at the bottom of the channel.

The final distribution of the water is made by means of furrow (dug out either by the plough or with the spade), separated from one another by ridges upon which the crops grow. The width of these intervening ridges varies from 3 to 10 feet, and the summit is raised from 11 to 15 inches above the level of the furrow. The length of the furrow is

from 130 to 160 feet, and it has been found that, with a porous soil like that at Gennevilliers, this is about the greatest length that the ordinary quantity of sewage allowed to flow on to the land at one time will traverse before complete absorption takes place. The plants are sown as closely together on the ridges as is compatible with a due supply of light and air; and, to economize space, a row is frequently planted on the slope of the furrows, in order that the ground taken up by the latter may not be entirely lost. On the average, about 9,700 heads of cabbage are planted on each acre, of which about two-thirds grow successfully. This crop is frequently preceded by one of rye, or it is followed by a second crop of cabbages, planted in the winter for spring growth. As the soil itself is not drawn upon to any large extent for the nourishment of the plants, there is not the same necessity, as in ordinary farming, to study a rotation of crop, except as a precaution against an undue multiplication of insects. The majority of cultivators take advantage of this fact to plant cabbages over the greater part of their lands for several years in succession, this being the crop which succeeds most surely, and with which the peculiar conditions of this mode of cultivation fit in most easily.

As has been previously stated, the secondary conduits are raised above the level of the fields. All that is necessary to start the irrigation of any particular piece of land is to open the flood-gate leading to it; the furrows become filled, and being sunk below the general level, there is no danger of soiling the plants. The waterings are given about once every three or four days; but such frequent applications, though not found too much, make it all the more necessary to be very careful as to the dose administered at one time. It is laid down as a cardinal rule by those who superintend the irrigations that the water should never be allowed to flow in such quantities as to cause it to hang about for any length

of time unabsorbed in the furrows. Stagnant sewage, as is well known, rapidly becomes offensive to the sense and detrimental to health; and it is not until it has been absorbed by the soil that it is placed under favourable conditions for oxidation. The soil in which the furrows run should be turned over at short intervals, and it is well to dig the mud which deposits in them into the earth forming the ridges. After a crop has been gathered, the relative position of the ridges and furrows is reversed before the next crop is sown. It is not to be supposed that all these rules are at present carried out to the letter. At the time of my visit to Gennevilliers there was quite a disturbance amongst the cultivators on account of the want of method in the irrigators, and one of them told me that his whole plot of ground had been under water for several days on account of some carelessness in connection with a flood-gate. This, like many other shortcomings, is likely to be remedied as the system is extended and perfected.

I now come to the financial part of the question. The cost of the operations hitherto carried out has been about £114,000, and it will take about £33,000 to complete the work at Gennevilliers. The projected extension to St. Germain is expected to cost about £200,000, so that the Seine will be entirely freed from sewage for about £350,000. The extension to Méry-sur-Oise is estimated to cost about £100,000. So far the return to the municipality has been nil; but I think I have shown that the scheme bids fair to pay eventually, even to them, if not a large percentage, at any rate something on the capital expended over it.

The results are, however, very different if we turn to the value of the land irrigated, and its increased worth to the proprietors. The land at Gennevilliers has, in common with that of the whole of France, been surveyed for the purpose of land-tax assessment. With this object the land has been

divided into five classes according to the productiveness of the respective soils; the relative value of these different classes of land being represented by the numbers 90, 80, 55, 40, and 30, the fifth class being land of the least value. In the maps the classes are represented by varying depths of shading.* The whole *commune* is split up by the assessment committee into a number of sections, which are distinguished by letters of the alphabet. It will be seen that the best land lies in a band bordering the river, the band being broader in the sections A and B than elsewhere. Consequently, these sections contain a large proportion of land of the first and second class, as much as 84 per cent. of A, and 71 per cent. of B, being composed of such land. C contains an equal proportion of good and of poor land, whilst D and E contain more poor than good land, no less than 89 per cent. of E being land of the fourth and fifth class. Consequently, E is by far the most sterile part of the *commune*. But, as will be seen by the maps, it is in this section that the largest proportion of irrigation has been undertaken. The value of the land before irrigation can be judged by reference to the map No. 2, by which it will be seen that the greater portion of the land in this section rented for less than 30s. an acre; that of the commune generally, as estimated from the leases, being about 58s. an acre for lands of the first and second classes, and about 48s. an acre for lands of the fourth and fifth classes. The average price of the different classes of land had varied a little from time to time, but between 1845 and 1870 the utmost variation did not amount to more than 26s. an acre one way or the other. It was not until 1874 that the first new lease of ground under irrigation was drawn up, and a striking advance in value was at once apparent. The ground was situated in section D, and had

* For the sake of convenience, it is only the parts actually under irrigation which have been shaded in the maps accompanying the Paper. These maps will be found after page 330.

previously let for 29s. an acre ; but under the new lease it was let for 70s. an acre. The rent of the plots of unirrigated land in the same section, the leases of which were renewed in that year, averaged 48s. per acre only. Since that year many new leases of irrigated lands have been granted. Fourteen new leases granted in 1875 for land in section E, the land in each case being either of the fourth or fifth class, averaged 109s. an acre; one plot that had previously fetched only 31s. an acre was now let for 130s., and another that had been worth only 30s. fetched 132s. ; while a third piece of ground, classed in the Assessment Register as land of the poorest kind, is now let for no less than 146s. an acre. A still more remarkable proof of the extraordinary change of value in the irrigated land is to be found in connection with a farm situated in section C, containing about 87 acres. This land which consists in about equal parts of land of the 1st, 2nd, 3rd, and 4th classes was let in 1852, at an all-round value of about 47s. an acre, and was re-let in 1873 on a 10 years' lease for 50s. an acre. In 1876 irrigation was established over it, and since then the lessee has sub-let certain parts at the following rates :— $7\frac{1}{2}$ acres at 108s. an acre, and $30\frac{1}{2}$ acres at 146s. an acre ; furthermore, the proprietor has succeeded in getting the lessee to pay him 22s. more than was originally agreed upon for each acre irrigated. In another lease the following clause is introduced :—"Should the sewage cease to be distributed upon the plain of Gennevilliers the present lease may be cancelled at the wish of either party." The highest value that has hitherto been reached is for a plot of land about 5 acres in extent, at Asnières, belonging to the town of Paris. This has been let to eleven cultivators, who pay an average of £8 6s. per acre for it, the lowest price being £8, and the highest £8 12s.

Judged by the price fetched by the plots of land at sales, the advance in value is not so marked. Naturally, whilst irrigation was still an experiment rather than an established mode of treatment, purchasers would be unwilling to pay a full price for land at the advanced rates, though tenants might be quite willing to pay high rents on short leases. Nevertheless, the prices paid for plots under irrigation have been very good. *Non-irrigated* land in section A of the 1st class fetched £77 per acre, and of the 3rd class, £40 per acre. A plot of *irrigated* land of the 3rd class, in section D, fetched £90 per acre; a piece of land of the 4th class, in section E, fetched £82 an acre, and a plot of 5th class land, £87 an acre—a price considerably in excess of that given for 1st class *unirrigated* land.

It is estimated that the advance in value of the land averages not less than £3 to £3 10s. per acre per annum, and that if the irrigation be extended to the whole of the commune, and to the adjoining one of Asnières, the total advance in value will be as much as £12,000 per annum. At present the increased revenue, which may be put down at about £3,000 a year, goes altogether into the pockets of the proprietors and lessees of the land; doubtless it will eventually, as it should, reach the municipal coffers in part payment of the expense to which the town has been put, and it is very possible that, ultimately, the town will make its sewage a source of actual gain.

There is one other side to the irrigation question which I shall not go into on the present occasion. I refer to the sanitary aspect. Great complaints have been made at Gennevilliers, by those who are opposed to the irrigation scheme, that the health of the inhabitants is not so good as before its introduction. They say that ague has been introduced in consequence of a rise in the level of the subterranean water, which now invades the cellar of their

houses. Without entering into any discussion of this matter, I may say that the rising of the water can be proved to be partly due to the construction of a weir, a few miles below, which was finished just before the irrigation was set on foot. By this weir the level of the Seine was raised about $3\frac{1}{2}$ feet, so that the whole of the evil complained of cannot be laid to the account of the irrigation. Doubtless this has tended to increase the elevation; but, as the works are extended, and it becomes possible to supply a much smaller quantity of liquid to each acre, any evils arising from this cause will disappear.

In conclusion, I have to acknowledge much valuable assistance from the Papers published in the Proceedings of the Institution of Civil Engineers, by MESSRS. HEDERSTEDT and TARGET; from the Report drawn up for the Members of the International Congress on Hygiene at Paris, by MESSRS. SCHLÖESING, DURAND-CLAYE, and PROUST; and above all, from the very interesting and able reports drawn up by the French Departmental Commissions, appointed in 1876 and 1877, for copies of which, as well as for other valuable material, I have to thank M. DURAND-CLAYE.

Mr. F. VIGERS (Member), in proposing a vote of thanks to Dr. STURGE for his Paper, said he should not venture to offer an opinion upon it, until he had carefully perused it, but, so far as he could judge from hearing it read, it appeared to be a valuable contribution to the information on this subject, which was one of the greatest interest and importance at the present moment.

Thus much might, he thought, be taken as an established fact, viz., that sewage put upon land was very well disposed of if the quantity did not exceed the amount which could be taken up by vegetation, and if the cultivator were free to take it or not as might be most convenient from time to time.

The great difficulty, especially in the valley of the Thames, was to get the sewage upon the land without offence to surrounding owners. In the Thames valley district, and in the neighbourhood of most towns, the land had a latent element of building value attached to it, and as a sewage farm was looked upon as positively injurious to all neighbouring properties, it was almost impossible, in these situations, to obtain lands to pour the sewage on. Hence (as one gentleman, at any rate, in the room had the misfortune to know), however suitable the site selected may be as regards the nature of the soil, or from an engineering point of view, a host of neighbours raise their voices against the scheme, and as experience had shown, constituted an opposition generally sufficiently strong to defeat the project. If a plan could be devised for dealing with sewage without all the offensive machinery of tanks and pumping apparatus—and he was afraid he must add if the name itself could be deprived of the disagreeable “sentiment” which belonged to it,—the discoverer would be welcomed with open arms.

He (Mr. VIGERS) was personally concerned in a small way as an owner, and he had been compelled to interest himself in the matter in connection with public duties in the district in which he resided, and, consequently, spoke from some experience of the difficulties of getting the sewage on to the land. If Mr. BIRCH, who he observed was present, and than whom there was no one more competent to speak on the subject, could devise a scheme, not only of dealing with the sewage when on the land, but a scheme by means of which it could be got upon the land so as to avoid injury to surrounding properties, and without exciting opposition from adjoining owners, a very great step in advance would be made.

Mr. R. W. PEREGRINE BIRCH (Associate) desired to

second the vote of thanks to the author of the Paper, the discussion on which would, he hoped, be adjourned until the next Meeting. He would, therefore, confine himself to saying on the present occasion that he agreed, generally, with all the author had written. It would be by means of such Papers as this that the prejudice which constituted the real root of the difficulty to which Mr. VIGERS referred would, in time, be overcome, and he hoped that Dr. STURGE's Paper would be widely circulated, showing, as it did, how effectually a great municipality could deal with its sewage, despite theories rightly or wrongly entertained with reference to injury to adjoining properties.

He hoped that some one would be able, in the course of the discussion, to speak on the subject of ague. He was inclined to think, as the author had said in his Paper, that the new weir had more to do with it than sewage irrigation. So far as he was aware, no facts had come to light in England to show that any kind of irrigation on drained land promoted ague. He hoped that he should be afforded an opportunity, by the adjournment of the discussion, of addressing the Meeting at greater length on the next occasion.

Mr. R. B. GRANTHAM (Associate of Council) said that he had listened to the Paper with great interest. There were many points of similarity between the methods described by Dr. STURGE and those with which we were familiar in this country. One thing which struck him was the smallness of the areas occupied by each renter, over which the sewage was distributed. In England, it was customary to distribute it over large areas of, say, 100, 200, or 300 acres—an excessively difficult thing to do, and very expensive. The rents to be obtained from such large areas were small in proportion to those which could be realized under

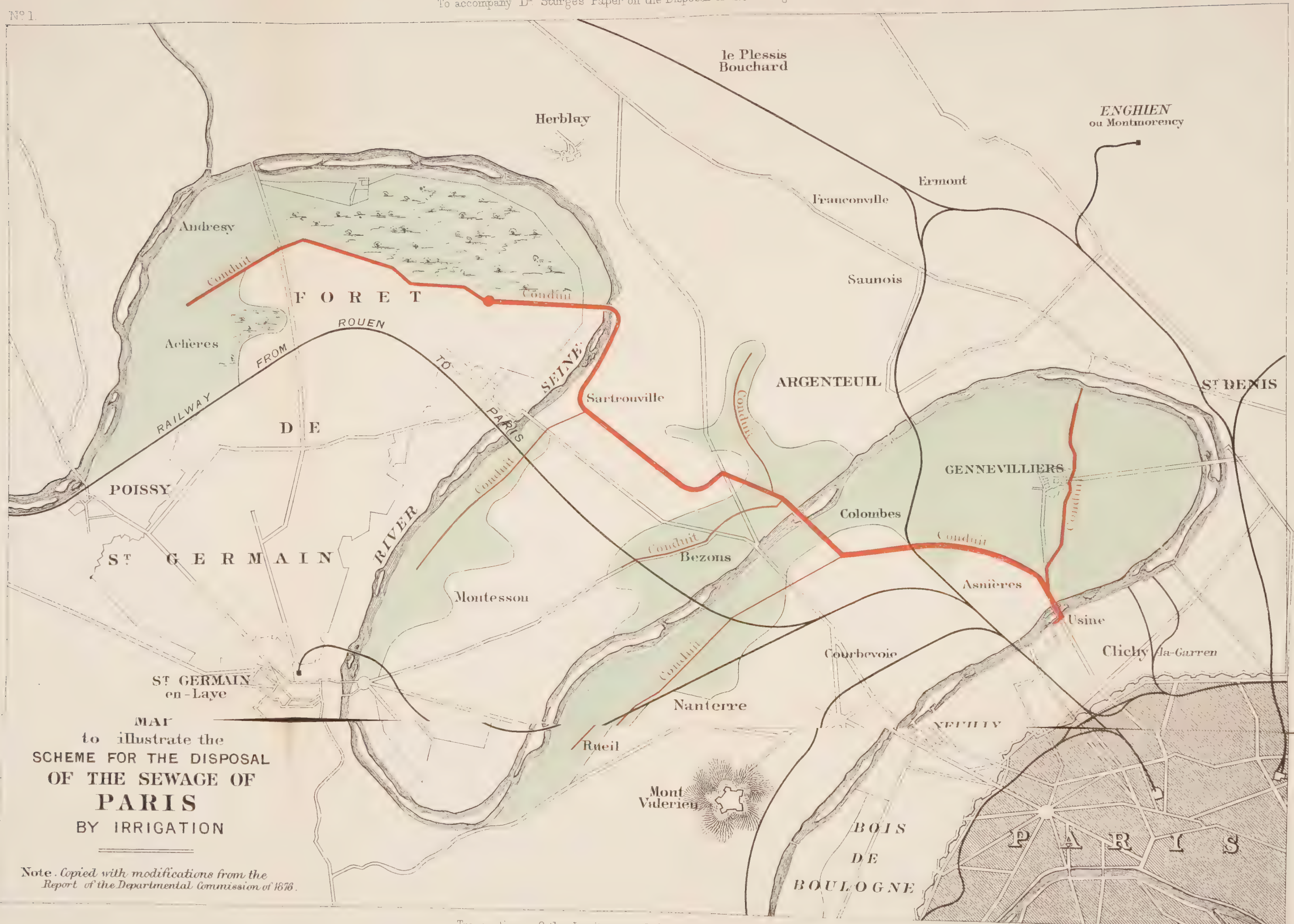
the system adopted in the neighbourhood of Paris. He concluded from the Paper that there was a great deal of surface water passing through the sewers, rendering the sewage much weaker than was usual in this country, and accounting for the very large quantity to be dealt with by irrigation. Dr. STURGE had mentioned as much as 11,000 gallons as taken by a single acre. This quantity, per acre, exceeded all experience in this country even where the crop was Italian rye-grass, which would take a very large amount. Ordinary crops would not take more than from 2,000 to 3,000 gallons an acre without injury. Intermittent downward filtration was a means of consuming a large quantity of sewage, and it was stated that parts of the areas irrigated consisted of porous soil. It would have been interesting had Dr. STURGE given some further information about the carriers for distributing the sewage on the land. These carriers were, he understood, from 10 to 11 feet apart, instead of from 30 to 40 feet as in England, according to the nature of the soil, whether stiff or porous. If in order, he would move the adjournment of the discussion until the 12th May, so that the Paper might receive the consideration which it deserved.

Mr. C. G. GREY (Member) said that as he should not have the pleasure of attending the next Meeting, there was one point which he would venture to throw out which might, perhaps, assist in the subsequent discussion, should it be adjourned. Nothing had been said in the Paper about the rainfall in the neighbourhood of Paris where the irrigation was carried on,—a point somewhat material to the discussion, judging by the offensive nature of the sewage in the neighbourhood of English towns, and to which the outcry against its use was mainly due. Dr. STURGE had stated that the sewage in the neighbourhood of Paris was much more

diluted than was common in English towns. That fact itself, he thought, went to show that a very much larger quantity could be applied to the land without its becoming offensive to the people living in the neighbourhood. The land also appeared to be of a very sandy nature. In most of the places where sewage was used in England, the land was probably less light in its nature, and even if artificially drained would not be so capable of taking in the water as land of the kind referred to in the Paper. It was, he thought, important to have some information about the rainfall of the district and the periods of the year over which the rainfall was distributed, because, as he imagined, there were many months in the year when the fall would be considerably less than in many English towns, and consequently a larger amount of diluted sewage could be taken on to the land than was the case in this country. On some of our English farms, where the sewage employed was much impregnated with solid material, a scum was left on the surface of the soil which was very offensive until washed in by heavy rains.

The PRESIDENT thought it desirable that the discussion should be adjourned, as the Paper contained a great deal of detail which it was hardly possible to understand or appreciate without careful perusal.

The vote of thanks to Dr. SURGE was put and carried unanimously, and the motion for the adjournment of the discussion to the next Meeting was also agreed to.



AT

THE ORDINARY GENERAL MEETING,

Held on Monday, May 12th, 1879.

EDWARD RYDE, VICE-PRESIDENT, IN THE CHAIR.

The discussion on the Paper by Dr. W. ALLEN STURGE, entitled "The Disposal of Sewage in Paris," was resumed.

The HON. SECRETARY read the following communication from M. LEFÈVRE, President of the Société des Géomètres of France, and one of the Honorary Members of the Institution :—

"I know Gennevilliers well, having been several times requested by the Civil Courts of Paris to make valuation surveys (expertises) there. I, therefore, have been able to make personal observations on the spot.

"Our newspapers have made much noise about this question of the sewage of Paris. A great deal has been written for and against the works which were executed in order to rid Paris of its infected waters, otherwise than by throwing them into the Seine, which had become a veritable quagmire.

"Gennevilliers is a large agricultural village, and at one time had fine prospects of extension. The value of building land had increased to a very large degree; but as soon as the neighbourhood between Gennevilliers and Asnières was seen to be invaded by the muddy and infected waters of Paris, this land lost a great part of its value. The soil, however, has acquired a high degree of fertility.

"Vegetables, principally cabbages, are grown there for the Paris market, which are very productive for those who cultivate them. However, the local consumers seem to avoid them, as they are considered indigestible; but at the Paris central market everything finds a purchaser.

"The question of the sewers, which are intended to be carried as far as the Forest of St. Germain, has given rise to very animated debates, incited by motives of great personal interest. The

Municipality of Paris are anxious to get rid of the sewage at any cost, and have to contend with companies of speculators and owners of land

"My personal opinion is that the dispersion of the sewage outside the great town must be considered as a public misfortune for the localities infected by it."

The HON. SECRETARY added, that from this letter it would appear that the difficulties which attended the disposal of sewage in Paris were identical with those encountered in this country.

Mr. R. B. GRANTHAM (Associate of Council) regarded the Paper as an important addition to present information on the sewage question—a question which had been discussed by the Institution on many occasions during the last ten years.

The Paper was interesting, not only for the information which it gave respecting the disposal of the sewage, but for its description of the methods of house drainage and of the other means by which the sewage was conveyed to the land. The system followed at Paris was altogether different from that adopted in London, and it was difficult to compare the two. In Paris the solid constituents of the sewage were collected in cesspools, and only the liquid portion and the surface washings passed into the sewers and were conveyed away to irrigate the lands shown upon the diagrams, and a considerable profit was thus realized. In London, on the contrary, the sewage was sent direct into the Thames without any attempt at separation, and was utterly wasted.

There appeared to be considerable difference, as regarded the constituents, between the sewage of Paris and that of London. According to Dr. STURGE, there were 18,920 grains per cubic yard of pollution in the Paris sewage as compared with 25,210 grains per cubic yard in that of

London. Perhaps Dr. VOELCKER would be able to verify these figures. The quantity of sewage in Paris was about 60,000,000 and in London about 120,000,000 gallons per day. The details given in the Paper were insufficient for determining whether the sewers were so constructed as to exclude the whole of the surface water; but, judging from the analyses, there would appear to be a large quantity of surface water passing through the sewers on to the irrigated land. It struck him that the pumping power employed in Paris was small—relatively to the amount pumped—when contrasted with the London figures.

The Paper was an additional testimony to the value of irrigation, offering as it does the best means of dealing with large quantities of sewage. This system, he was glad to say, was being extensively adopted in this country, in preference to methods of chemical treatment, which were necessary in few instances only. With reference to the value of sewage as a fertilizer, he might mention that the British Association Committee, of which he was Chairman, went very carefully into the question of produce from a given amount of sewage. The Committee were able to distinguish the exact quantity of chemical constituents taken up by the crop, lost in the land, and evaporated. It was found that about 50 per cent. of the nitrogen went to the vegetation, that 11 per cent. was evaporated, and that the rest was lost in the soil, passing out in the effluent water. Full details of these experiments, which were, he believed, the most complete which had been made, would be found in the published reports of the Committee, copies of which were in the Library of the Institution.

Mr. R. W. PEREGRINE BIRCH (Associate) was very glad to have the opportunity of adding a few words to what had fallen from him on a previous occasion. The author

had, he thought, fallen into a slight inaccuracy on one point, and his object in calling attention to it was rather to strengthen than to weaken his case, which was, if anything, under-stated. Dr. STURGE had stated, as the result of enquiry, that the sewage of Paris was weaker by about one-third than the sewage of London. Of course, if that were so, the facts given in the Paper were not so very important to Londoners and English people. But he (Mr. BIRCH) thought the reverse was the case. He believed that the sewage of Paris was stronger than that of London. He had looked through the figures from which Dr. STURGE had obtained his information. The comparison made was from analyses of London street washings, which he (Mr. BIRCH) supposed were taken at the beginning of a shower, and they certainly showed a larger proportion of solid matter in the London sewage; but he had gone through the Rivers Pollution Commissioners' Report, which contained a number of analyses of London sewage, and found that the average of solid matter, over a series of years, was about 136 parts in 100,000. This, if worked out, would be found to give 16,065 grains of solid matter to the cubic yard, against 27,620 grains in Paris sewage. It might be said, that the whole of this was not organic matter; but at any rate about the same large proportion was in each case. Then as to the amount of the organic nitrogen. He found, from a number of analyses published in the same Report, that average London sewage contained 2·5 grains of organic nitrogen to 100,000, while Paris sewage had been found to contain $\frac{7}{100}$ lb. of organic nitrogen in the cubic yard, which, if worked out, would give 4·1 grains in 100,000. This showed, as he had said, that Paris sewage was half as strong again as London sewage. This being so, the facts given in the Paper were more significant than even the author thought them to be. It was stated, on page 311,

that two steam engines, of 20 horse-power each, were engaged in pumping from 6,000 to 7,000 cubic yards of sewer water on to 17 acres of land; but the time occupied in doing so (probably a year) was omitted. Seven thousand cubic yards would represent about 100,000 gallons a day, or 100 people per acre.

There were some facts contained in the Paper which ought to be very widely published, those for instance (page 312) referring to the rapid increase of area under cultivation. To quote the author's words—"By the end of 1873, there were 217 acres under irrigation. In July 1875, this had grown to 313 acres. On 1st January, 1877, the total area was 728 acres; and in June of last year, which is the latest return that I have been able to obtain, there were 914 acres subjected to treatment with sewage." He wished that these figures, together with the statistics of produce per acre given on page 317, could be brought under the eye of every farmer and market gardener in this country. Nothing would do so much towards solving the sewage difficulty, as the dissemination of practical facts like these. He observed that Dr. STURGE had referred on page 312 to the Paper which he (Mr. BIRCH) had read before the Institution last year. With reference to this allusion to the facts given in his Paper, he (Mr. BIRCH) thought it important to observe the difference between the average and the maximum, the average being the quantity at command, and the maximum being the quantity recommended for certain crops. One thing to which special attention should be called in his (Mr. BIRCH's) Paper, was the statement, that no less than 20,000 gallons a day had been put on a single acre of land.

On page 313, Dr. STURGE said, "It was found by experiment that the land at Gennevilliers was capable of purifying as much as 14,000 gallons per acre per diem, if due care were exercised in the management of the irrigation."

He should be very glad if the author could give details of the experiments, and show how the engineers satisfied themselves that 14,000 gallons per day could be properly purified by the land. It was very satisfactory to hear that the occupiers of the land—and they must be numerous, seeing that they occupied about 900 acres, held in 3 and 4 acre plots—had offered to pay for the sewage. This was a step in the right direction. He quite agreed with Dr. STURGE that it was very desirable that the operations should be extended to land in the district of Méry-sur-Oise, and that the additional area should be cultivated in some other way—in grass for instance. He was informed that a large portion of the market garden land, at Gennevilliers, was not irrigated at all between the months of November and March, and it was found from experience that these were the very months when farmers would be glad to use the sewage on their grass land. He believed that with this extension of area laid down in grass, the sewage would be got rid of all the year round much more easily than had hitherto been the case.

He was surprised to learn that potatoes had proved an unsuccessful crop at Gennevilliers, for Mr. BLACKBURN, of Aldershot, who had done so much in the way of sewage farming, found potatoes answer so well that he had grown them continuously for twelve or fourteen years, and spoke highly of their quality. He could not help thinking that this particular crop had been mismanaged at Gennevilliers. He was glad to learn that the growers of ornamental flowers and of those used for the manufacture of perfumes had taken sewaged land. This might help towards removing existing prejudices.

Reference had been made by Mr. GRANTHAM to some interesting experiments conducted under the auspices of a Committee of the British Association, on the proportion of

chemical constituents utilized by vegetation. It was obvious that the proportion of nitrogen taken up by the plants or lost in the soil must depend very much on the quantity of sewage put upon the land. If the quantity of sewage were small the whole of the nitrogen might be assimilated by the plants, but the same proportion would not be utilized if the quantity of sewage were larger.

Dr. A. VOELCKER, F.R.S. (Visitor), had read Dr. STURGE's Paper with very great interest, and if the observations which he proposed to make had not the attraction of novelty or of special value, they possessed the recommendation of being founded upon his own individual experience.

He knew the land shown on the diagram, in and around the Forest of St. Germain. As lately as last December he was in Paris, on business connected with the conversion of cesspool contents into solid fertilizers. This conversion was now carried out on a large scale, and the Members of the Institution would be interested to learn that the manure so produced contained as much as 12 per cent. of ammonia ; more, in fact, than was contained in the best guano. He mentioned this fact because it had a close relation to the question which had been raised that evening both by Mr. GRANTHAM and Mr. BIRCH. Mr. BIRCH had expressed some doubt whether the statement in Dr. STURGE's Paper, as regarded the dilution of the sewage, was correct. He was sorry to say he had no exact figures at the moment, but, speaking from general observation, he must say that he agreed with Dr. STURGE, that the sewage of Paris was very much more dilute than the sewage of London, for the simple reason that comparatively little of the solid or liquid excreta of the former town passed into the sewers. Even in the better parts of Paris those excreta were collected in

water-tight pails and removed periodically. Only the small quantities of excreta not so collected passed into the sewers, so that in fact the sewage of Paris was more like dirty water than sewage. Notwithstanding this, the pollution of the Seine was something terrific, and would not be endured in this country. Frenchmen, however, were not so particular, but the time would come when something must be done on a scale considerably greater than was at present the case.

One or two points in the Paper had particularly struck him. The great dilution of the sewage would explain why such an enormous quantity as 11,000 gallons per diem could be poured through the soil; and it must further be remembered that the soil of Gennevilliers was so extremely porous that almost any amount of water could be passed through it. Owing to the comparatively small quantity of organic matter in the Paris sewage, there was very little of the scum from it which so chokes up the surface of the land, whereas in England the sewage is of a different character. The absence of this scum renders it possible to pass a much larger quantity of sewage through the soil.

He did not believe that a porous and well-drained soil would ever become what was called sewage-sick; the theory of sewage-sickness had nothing in it, for the soil purified itself, and was like a fire which continued to burn as long as it was fed and the draught maintained.

If the soil were well drained and suitable for the purpose, sewage might be put upon it year after year without injury; but there were soils, of course, on which very little could be put, and where a nuisance would very soon arise. The soil of Gennevilliers was remarkably well adapted to sewage irrigation, a fact proved by the large quantities of sewage which was passed through it.

On page 313 of the Paper the author said: "In order
" to bring about complete utilization, they calculate that the

“sewage should be delivered over the land at the rate of “not more than from 400 to 500 gallons per acre per diem.” He should like Dr. STURGE to explain the words “complete utilization.” Did he mean the complete disinfection or purification of sewage by extracting the fertilizing principles from it as completely as possible? He presumed that he meant this, for it was stated on the following page that for the epuration of sewage a very much smaller quantity of land would be required than for its complete utilization. Now, with reference to complete utilization, he would observe that the more complete it was the more ruinous it would be to the town authorities and the unfortunate farmer who tried to extract all the fertilizing matter from the sewage. In order to get the maximum utilization, *i.e.*, to recover as much as possible of the money which must be expended in order to get rid of the sewage of the town, as little land should be taken as was consistent with the mere purification of the sewage, and utilization should be regarded as secondary only.

It was only by adopting intermittent downward filtration and by using the very largest quantity of sewage, provided the land would take it, that anything like a profit would be got out of it. All agriculturists were aware of the advantage, at a certain time of year, of having an unlimited quantity of fertilizers for the crops. The sewage could be applied, as no doubt these market gardeners had applied it, to the cabbages, root crops, beet root, or carrots, or mangelwurzels, referred to on page 317, in very large quantities, and just when it was wanted. He did not doubt for a moment that those large quantities (though he never before heard of a crop of from 24 to 32 tons of onions per acre) were entirely due to the application of sewage in large quantities and at the proper times. The Paris market gardeners could take the sewage or leave it alone, as they liked; a position

very different from that of many of our English cultivators, who might otherwise be disposed to use the sewage. The quantity of land on which the sewage was applied at Gennevilliers was, after all, very small, only some 900 acres, an area evidently insufficient for dealing with the sewage of Paris. He believed that the city of Paris would have to take the land at St. Germain and deal with the matter on a very comprehensive scale.

The author of the Paper had expressed a hope (page 325) that the sewage would ultimately prove a source of actual gain to the municipality. He must say that he regarded this as very doubtful. He believed that the sooner the authorities of Paris, and, indeed, of any other towns, reconciled their minds to the fact that they would have to pay for getting rid of the sewage, the better it would be.

If he were asked how to deal with it, he would say (assuming it to be possible to do so), "Send it right away into the sea, and take care that it does not come back again." If this could not be done, the best way was to spend as little money as possible on it, by putting it on the land.

It was not possible, of course, to lay down general rules applicable to all cases. It would be ridiculous, for instance, to lay out an irrigation scheme for a little hamlet of 150 people. He made these remarks, because he was frequently attacked for inconsistency. He was an advocate for complete purification, but he was not an advocate for extracting all the fertilizing matters from the sewage. It was not usual to calculate how much manure would be wasted if a good and paying crop were secured. In the market gardens in the neighbourhood of London, 50, 100, and 150 tons per acre of farmyard manure was not an unusual dressing, and although it cost a good deal of money to apply such a large quantity, and although, perhaps, more than half of it

was wasted, simply draining away, what did it matter so long as a good crop was obtained? In ordinary farming it was, indeed, found necessary to use a large excess of manure, in order to produce luxuriant and abundant crops. There was an apparent waste, but it was found to pay; and in the same way he believed that it paid farmers a great deal better to use sewage in very large quantities, provided the land would take it.

Mr. HENRY ROBINSON (Visitor) said that some of the speakers who had addressed the Meeting had apparently been discussing very dissimilar things. Some of them had been talking about what was understood as sewage on this side of the Channel, and others of what Dr. VOELCKER had called "dirty water"—the sewage of Paris. Not only was it necessary that those who took part in the discussion should be very careful with reference to the materials which went to make up their knowledge, but they should be equally careful to see that the conditions were similar before applying their information to other cases. Except on good porous land it was obviously impossible to secure results in this country similar to those described in the Paper, and unless the character of the soils were identical, or nearly so, any comparison would be fallacious.

He had inspected a great many towns with reference to the disposal of their sewage, and had collected a large amount of information on the subject, which would be found in his book in the Library of the Institution. The work to which he referred contained a table showing the area of land per million gallons of sewage treated. All these towns were well water-closeted, and not like Paris, where the excreta were carefully excluded from the sewage. The chief ingredients which caused the difficulty in dealing with sewage in English towns were absent from the Paris sewage,

and this fact it was, combined with the extremely porous nature of the soil at Gennevilliers, which rendered it so easy to deal with. There was some danger, therefore, lest these results, however valuable in themselves, should be imported wholesale, and applied to cases where, as in this country, a different condition of things prevailed.

The author said, on page 312, "The quantity of water pumped on to the land is about 10,000,000 gallons per diem, being at the rate of nearly 11,000 gallons per acre"; this gave a million gallons on rather less than 100 acres of land. In 32 cases of large towns where irrigation was practised in this country, the average in the table to which he had referred was 389 acres per million gallons of sewage, showing at once, that, in this country with varying qualities of land, and a very foul sewage to purify, the conditions required nearly 400 acres to do what was done in about 100 acres in Paris. This was a very important point, for anyone ignorant of these facts, and working out the Paper like a rule-of-three sum, would argue "Because I can put so much on so many acres, I can put so much on such another quantity of land." It would be interesting if the author could give the working expenses of pumping and delivering the sewage, and also some information with reference to the nature of the experiments alluded to on page 313, as to the effluent water, for instance, for without such information the matter was not so clearly or scientifically defined as to admit of discussion. The average would work out, he thought, at about one acre to 280 people, while the average allowed in this country was about one acre to 100 people.

One point, referred to by Dr. VOELCKER, could not be kept too clearly in view. Those who wanted to extract all the manurial properties from sewage fell into the grave error of imagining that when once brought on to the land

these properties remained there till utilized. He thought the experience of all who had given attention to this point went to prove that an acre of land was no richer for the sewage of 1,000 people than for that of 100 people. The crops might take up one out of five units, and the other four units would pass through the soil. It had been thought that a sandy desert could be converted into rich land by bringing sufficient sewage on it. It had been shown, however, that after many years of application of sewage to the Craigen-tinny sandy soil it only contained three per cent. of organic matter, the rest being pure silica. The sand would not retain the manurial property of the sewage. The crops extracted what they wanted, and the rest went to waste.

On page 325 there was an observation which it was important to bear in mind in this country, where sanitary matters were carefully regarded. The author said, "There is one other side to the irrigation question that I shall not go into on the present occasion, I refer to the sanitary aspect. Great complaints have been made at Gennevilliers, by those who are opposed to the irrigation scheme, that the health of the inhabitants is not so good as before its introduction. They say that ague has been introduced." Had any reliable information been obtained with reference to this point? because it would be very useful to know whether there was danger to health in allowing sewage to be poured upon very porous land in such large volumes. He remembered that in the *Times* of September 1st, 1875, there was an account of these sewage operations, which showed how very different were the views which were taken at different periods. Now, the work is regarded as a great success, and only a passing reference is made to ague; but the *Times* report showed that in 1875 the extension of sewage land was not regarded with favour, as it was alleged that the wells had become polluted, and the subsoil water fouled. The

point was important that, although the sewage might be purified to a certain extent, the portion which passed through the soil, and was not taken up by the vegetation, might produce the pollution of subsoil waters, and consequent illness. If this were so, the gain of mere pounds, shillings, and pence was not an unmixed advantage, and the public health or the public feeling was not to be weighed against so many more carrots or so many more mangel-wurzels, worth so many pounds.

Upon the whole the operations at Gennevilliers might be taken as an excellent work, and he considered that all interested in the question were indebted to the author of the Paper for having dealt with the matter in so able a manner.

Mr. F. WENTWORTH-SHIELDS (Visitor) believed that almost all soils were capable of receiving sewage (some took up more and some less), and he had seen larger crops at South Norwood, where the land was stiff clay, than anywhere else. His opinion was that the goodness of the soil told in sewage farming in the same way that it told in other kinds of farming. It had been said that it was the common practice in this country to put the sewage of 100 persons on an acre of land. Everybody knew of the number of designs which were given in recently for the Upper Thames Valley drainage, and he himself was one of the competitors. In every case the rate of about 300 persons to the acre was proposed by the authors, and he thought this might be taken as the right proportion on a fairly porous soil, and since deep drainage had come into fashion.

The Paper under discussion was one of very great interest, as all would admit; but it had a defect characteristic of most Papers on sewage farming—the absence of all information as to the net *money* results of the opera-

tion. A gentleman, who occupied a prominent position as Chairman of a Sewage Farming Company, had informed him that the difficulty was to find a sale for their produce—that they were constantly digging magnificent vegetables into the soil, because they would not bear the cost of carriage to the market. Where was the good then of getting 60 tons of mangel-wurzel, or other produce in proportion, if no purchasers could be found? Herein lay the real difficulty of sewage farming.

The authorities of Paris had found, as was found in this country, that all manner of difficulties confronted the attempt to dispose of sewage upon land in the neighbourhood of residential property. He had been for some time of opinion that the moral to be drawn was, that engineers and surveyors must make up their minds to remove their sewage farms much further away from the towns they drained—in fact, into country districts free from all habitations, otherwise the opposition would invariably prove so strong, and the public authorities so little inclined to combat it, that the schemes would have little chance of accomplishment.

Mr. ROBINSON wished to explain that the figure he had given, viz., 100 persons to the acre, was the proportion, per acre, recommended by the Local Government Board. The conditions varied so greatly that he should be very unwilling to suggest any arbitrary figure on his own responsibility.

Mr. P. S. REID (Member) said that he was conversant with the system adopted in Paris, where the storm water passed direct into the sewers without any attempt at separation. To deal with such a mass of liquid satisfactorily, it was necessary to pass it at once on to the soil while it was

fresh, and before it had time to ferment. The complaints about the sewage operations at Gennevilliers were evidently attributable to the rapid fermentation, resulting from the great amount of sunshine and the small rainfall, which distinguish the climate of Paris from our climate in this country.

Looking at the relative mortality of Paris and London, the respective death-rates of which he saw by the Registrar-General's latest Reports were 30·9 and 25·7, we had reason, he thought, to be thankful that we were blessed with a different system of sewerage. There was no analogy whatever between the Paris system and that to which we were accustomed in this country, and the utilization of sewage upon land at Gennevilliers was no test of what could be done in a similar way in England.

Dr. STURGE thanked the Members of the Institution for the very kind manner in which his Paper had been received, and also for the numerous valuable comments on it which had been made in the course of the discussion. His knowledge was naturally rather second-hand. As a physician he had taken a deep interest in the question; but the agricultural facts in his Paper were derived from published reports and other sources of information collected at Paris.

He was sorry that the President of the Institution of Surveyors of France was opposed to the scheme. He was aware that a very large body of public men in France—not only those interested in property at Gennevilliers, but many others—objected to an irrigation scheme, and there was nothing for it but to push on in spite of them. He had no doubt that in time a change of opinion would take place, and that it would be seen by everyone that the irrigation of land was the best way of disposing of sewage. No doubt there were many difficulties yet to be overcome, but, most of

those who had paid special attention to the subject were now pretty much agreed that of the various evils arising from sewage those arising from sewage irrigation were the least.

In Paris, a large proportion of the excreta was conveyed to Bondy, where they were converted into an artificial manure, and he believed this was done with the least possible annoyance; but the collection of the excreta from cesspools was a serious nuisance. This was sometimes done without annoyance, but at times the nuisance to the neighbouring householders was very great.

Mr. BIRCH's idea was that there was a greater amount of organic matter in the sewage of Paris than in that of London. He (Dr. STURGE) should be glad to hear that this was the case; but in the face of Dr. VOELCKER's statements, it was rather difficult to know what to believe. Mr. BIRCH had put into his hand the first Report of the Rivers Pollution Commissioners, in which they stated that 10 tons of average water-closet sewage were equivalent to 12 tons of the average sewage of a town supplied with privies. If that were so it showed that the mere fact of having water-closets did not make a very great difference in the amount of the organic matter in the sewage. Another statement in the same Report was to the effect that "the proportion of putrescible organic matter in *solution* in the former is but slightly less than in the latter, whilst the organic matter in *suspension* is somewhat greater in the sewage of towns served by cesspits than in water-closet sewage." As he could not speak from any personal knowledge, he should not wish to say very much about this question. A very large quantity of water got into the sewers in Paris—not so much storm water as surface washings. It should be borne in mind that street washing in Paris was carried out on an enormous scale. Most of the streets were

washed down at least once a day very freely. Hydrants were turned on, and men and women with brushes and brooms cleaned the pavement thoroughly. The result was that a large quantity of mud and organic *débris*, accumulating in the streets, got in this way into the sewers.

He was rather disappointed to hear from Dr. VOELCKER that, in his opinion, it would be found to pay better to pour a very large quantity of sewage on to an acre of land than to spread the sewage over a wider tract of country; because he had hoped it would prove, as he knew the engineers in Paris believed, that they would be able to spread it over so large an area that sanitary evils would disappear, and that the return on the outlay would be correspondingly greater. The 150,000 acres (the area given on page 314 of the Paper, as that required for complete utilization) was the amount given in the Engineers' Report, so that it was evident the spreading of the sewage over a large breadth of land was under contemplation at Paris. This was easier to do in France than in this country. Here a sewage-farm stood out distinct and by itself, the surrounding owners and occupiers turning up their noses at it, so that there was little chance of extension; whereas in Paris an equal area of sewaged land would be distributed among a large number of independent cultivators, who would ask for sewage when they wanted it. It was believed that the system of distributing the sewage among independent cultivators would allow of indefinite extension of the irrigation works, and that in this way the sewage might be made a source of profit, while the sanitary evils would be very much lessened. He was much disappointed to hear from Dr. VOELCKER that he regarded this expectation of wide extension as a vain hope.

He did not think that the amount of organic matter in the 11,000 gallons referred to in his Paper was more than

could be utilized on an acre of land. But even assuming this to be the case, it would be a further proof that, if the quantity were halved, the amount of produce would not be much diminished; and if even a third of it only were distributed on each acre of soil the value of the land would still be largely increased. If only a small increase in the producing power of the land could be shown, it would pay to spread the sewage over a very much larger area, distributing it to individual cultivators who wanted it, at the rate of 3,000, 4,000, or 10,000 gallons per acre per diem as they might require. It would be in the power of the authorities to meet the wishes of cultivators in this respect as soon as they had acquired the large tract to the north of the Forest of St. Germain. When a cultivator had got as much as he wanted, the flood-gates could be closed, and the sewage might be supplied to other cultivators who applied for it. Supplied in this way and relieved of the necessity of taking the sewage whether they wanted it or not, the cultivators would soon learn to appreciate it. The value of the land had already gone up considerably, and the town might in time be able to charge some fair sum for the sewage.

He was afraid he was not in a position to give any definite information as to the money results, but something in this direction might be inferred from the fact that the land shown in the maps had risen so greatly in value.

The sanitary question was only just referred to in his Paper. M. PROUST, one of the most eminent hygienists in Paris, and a member of the Commission appointed to investigate this matter, came to the conclusion that the case against sewage irrigation, as regarded ague, was not made out. The weir referred to was outside the limits of the map, near a place called Bezons. The level of the Seine appears to have been raised about 3 feet

by the construction of the weir, and the consequence of the rise was, that the cellars at Gennevilliers became inundated and remained so till the present day. It was quite possible, under the circumstances, that the unutilized sewage may have found its way into the cellars. There had been much exaggeration as to the amount of ague, which was small, not much greater than it had been before the sewage was taken there.

The evidence as to the alleged prevalence of diarrhœa and dysentery was of an equally unsatisfactory character, and M. PROUST came to the conclusion, that there had not been an increase in the number of cases of either disease.

Mr. GRANTHAM had put into his hands Mr. TARGET's Paper, in which was given the death-rate at Gennevilliers. The rate did not seem to be on the increase in Gennevilliers itself. It was higher, no doubt, in Paris than in London, and it might be that their system of cesspits had something to do with it, but no rise in the death-rate could be traced to the irrigation.

He had been asked how the experiments alluded to on page 313 were made. They were made on a small plot of land in the E. district of the map by M. LOUIS DURAND-CLAYE. These experiments were very carefully described in one of the Reports. The actual analysis of the soil, the produce, the amount of nitrogen used up, and the condition of the filtered water were all carefully set forth.

He desired to add, in reply to Mr. GREY, that the drainage took place naturally. The soil being very porous at Gennevilliers, a few drains only were provided to facilitate the removal of the subsoil water. The rainfall in Gennevilliers was 24 inches per annum; the average of the last eight months of the year being considerably greater than that of the past four months.

THE CHAIRMAN thought that all would concur in pronouncing the Paper a valuable addition to the "Transactions," forming, as it did, a permanent record of what had been done in the way of sewage utilization in one of the largest cities on the continent of Europe. On a former occasion, at the beginning of the present Session, he had called attention to the fact, that, whatever the differences of opinion with reference to points of detail, there is a decided convergence of opinion in favour of putting the sewage upon the land. It was satisfactory to learn that practical steps in this direction were being taken at Paris, and he could not help thinking that, in disposing of their sewage to a number of people, the French were setting an example which, sooner or later, we should have to follow. As one of the speakers had said, much of the prejudice against sewage farming in England was due to our system of making the sewage farm an isolated and exceptional undertaking. Much of this prejudice would disappear, if, as was proposed at Paris, the sewage could be distributed in smaller quantities all over the country, and there would then be no more objection to it than there is to the many other fertilizers used for increasing the productions of the land.

The Thames Valley scheme would probably have encountered very little opposition if its promoters, instead of proposing to bring the sewage of large and populous districts into one locality, had spread it abroad as much as possible. The lands shown on the maps illustrating this Paper were not portions of the same estate let, as had been supposed, in small portions to separate cultivators, but were owned by a large number of proprietors. The object in view was to induce these landowners and their tenants to take the sewage and use it on their lands, and the Municipality of Paris—whatever Dr. VOELCKER might say about the desirability of putting the sewage into the sea

—would find it best to bear the expense of taking it to the land, where the owners would take it, be glad to use it, and would, he believed, do so at a profit. This was what we also were coming to in England. There was much yet to learn, and farming under a system of sewage irrigation had to be learned just as much as farming under any other system, for what would suit one farm and one soil was totally unsuited to another farm and another soil.

He did not agree with the statement that land could not become sewage-sick. Land would get sick of anything, and wanted change. This meant that more land was wanted for sewage purposes than has hitherto been taken, so as to admit of rest and change, and he believed that under such a system the most beneficial results would be obtained.

He was glad that the Session had been wound up with such an excellent Paper, and the gentleman who had prepared it was entitled to the best thanks of the Members.

The Meeting then adjourned.

THE ANNUAL GENERAL MEETING,

Monday, May 26th, 1879.

 WILLIAM STURGE (PRESIDENT) IN THE CHAIR.

Messrs. R. CLUTTON and A. VIGERS, having been requested to act as Scrutineers of the ballot for the Election of Council, the balloting list submitted by the Council in accordance with the Bye-laws, and the record of attendance of the Members of Council, were read, and the ballot declared open.

The Report of the Council on the state of the Institution and the Statement of Receipts and Expenditure for the year 1878 were read.

RESOLVED—"That the Report of the Council and the Balance Sheet be received and approved, and be printed and circulated with the 'Transactions.'"

RESOLVED—"That the thanks of the Institution be given to Messrs. A. GARRARD and R. VIGERS for the efficient performance of their duties as Auditors, and that they be requested to continue their services for the ensuing year."

RESOLVED—"That the thanks of the Institution are due and be given to the President, the Vice-Presidents, and the other Members and Associates of Council, for the able manner in which they have administered the affairs of the Institution."

RESOLVED—"That the thanks of the Institution be given to Mr. JOHN WORNHAM PENFOLD (the Hon. Secretary), to Mr. JULIAN C. ROGERS, to the Treasurer, and other Officers of the Institution, for the able manner in which they have executed their several duties."

The ballot having been closed, the Scrutineers reported that the following gentlemen had been elected as Council for the ensuing year :—

President.

WILLIAM STURGE.

Vice-Presidents.

EDWARD RYDE	EDWARD I'ANSON
THOMAS SMITH-WOOLLEY	WILLIAM JAMES BEADEL

Members of Council.

ROBERT COLLIER DRIVER	CHARLES STEPHENSON
FRANCIS VIGERS	DANIEL WATNEY
VIRGOE BUCKLAND	WILLIAM SCARTH
CHARLES JOHN SHOPPEE	JAMES MARTIN
THOMAS CHATFEILD CLARKE	THOMAS BINNIE
ELIAS PITTS SQUAREY	ALFRED O'WTHWAITE SEDG- WICK

Associates of Council.

RICHARD BOXALL GRANTHAM | FREDERICK MEADOWS WHITE

RESOLVED—"That the thanks of the Meeting be given to Messrs. R. CLUTTON and A. VIGERS for their services as Scrutineers."

A vote of thanks to the President for his conduct in the Chair having been passed unanimously, the Meeting separated.

THE ELEVENTH ANNUAL REPORT OF THE COUNCIL.

Annual General Meeting, May 26th, 1879.

The considerable increase during the twelve months in the number of Members and Associates (the details of which are hereinafter given) testifies to the increasing estimation in which the Institution is held by the important profession which it represents.

The Council record with regret the loss of several Members and Associates during the year. Brief sketches of their professional careers are appended to this Report. Mr. J. T. WOODHOUSE and Mr. J. TAYLOR, of Earsdon, were representative men in their branch of professional practice, and will be long remembered for the prominent parts they took in opening up the mineral resources of the Midland and Northern districts of England. By the death of Mr. RUSHWORTH the Institution has lost one of its oldest and most respected Members.

The distinction of Honorary Membership, offered to MM. F. E. LEFÈVRE of Sucy, and E. BUCAILLE of Havre (respectively President and Vice-President of the Société des Géomètres of France), was accepted by those gentlemen, whose cordial reception of the English Deputation to the Paris Congress has thus received a permanent mark of recognition.

During the year 2 Honorary Members, 18 Members, 17 Associates, and 4 Students, have been admitted into the Institution, and 2 Associates, having become eligible, have been transferred, under the powers of Bye-Law XIII., to the

class of Members. The Institution now numbers 10 Honorary Members, 320 Members, 146 Associates, and 10 Students, or a total of 486 of all classes.

The financial condition of the Institution continues thoroughly sound and satisfactory. The Accounts show a larger income than in any previous year. The Gross Revenue has been augmented by the income accruing from the letting of rooms for Arbitration purposes.

The Council, adhering to the policy which they have steadily pursued for some years past, have devoted a portion of the surplus funds towards the reduction of the building debt. A further considerable diminution in the debt will have been made before the publication of this Report, and it is confidently hoped that the whole liability will be extinguished by the end of another year.

During the year several important improvements in the Institution premises have been carried out by enlarging and adapting the upper rooms for arbitration purposes. The sum of £250 has been expended on these alterations, which will render the premises much more commodious.

During the recess, important improvements were effected in the ventilation of the Lecture Hall. The cost of these improvements, and of the repairs necessary to maintaining the property of the Society in good condition, has been defrayed out of revenue.

The number of subscriptions in arrear was comparatively small at the end of the year, but the Council press upon the notice of Members the desirability of forwarding their subscriptions on or about the 1st of January in each year, and thus save the trouble and expense of repeated applications.

The Report of the Deputation to the International Congress of Surveyors, held at Paris in July last, is in the hands of Members, who will be gratified to know that the Profession in England was represented on the occasion.

The Balance Sheet for the year ending December 31st, 1878, shows the following results :—

RECEIPTS.			EXPENDITURE.		
	£	s. d.		£	s. d.
Total Revenue . . .	2,010	8 7	Total Payments out		
Revenue Balance in			of Revenue—Cur-		
hand, January 1st,			rent Expenses . .	1,476	19 0
1878	75	18 11	Transferred to Capital	527	0 0
Entrance Fees and			Revenue Balance in		
Life Compositions			hand, December		
carried to Capital			31st, 1878. . . .	82	8 6
Account	180	12 0	Total Payments out		
Transferred from Re-	527	0 0	of Capital, Build-		
venue			ing and Furniture	316	4 3
Capital Balance in			Debentures paid off	400	0 0
hand, January 1st,			Capital Balance in		
1878	11	14 7	hand, December		
			31st, 1879 . . .	3	2 4
	<u>£2,805</u>	<u>14 1</u>		<u>£2,805</u>	<u>14 1</u>

In addition to the above cash balances, Stock to the amount of £347 3s. Consols, and £141 16s. 9d. New Three per Cents. (of which £100 is invested in the Library Account) stood to the credit of the Trustees of the Institution of Surveyors on the 31st of December, 1878.

A summary of the Receipts and Expenditure for the present year, up to this date, is as follows:—

RECEIPTS.			EXPENDITURE.		
	£	d.		£	s. d.
Total Revenue . . .	1,418	6	Total Payments out		
Revenue Balance in			of Revenue—Cur-		
hand, January 1st,			rent Expenses . .	723	18 2
1879	82	8 6	Interest on Mortgage		
Entrance Fees and			Debentures . . .	40	11 0
Life Compositions			Revenue Balance in		
carried to Capital			hand, May 26th,		
Account	171	3 0	1879	456	2 10
Capital Balance in			Payments out of		
hand, January 1st,			Capital—		
1879	32	14 1	Debentures paid off	350	0 0
			Furniture & Fittings	121	10 7
	<u>£1,704</u>	<u>9 1</u>	Capital Balance in		
			hand, May 26th,		
			1879	12	6 6
	<u>£1,704</u>	<u>9 1</u>		<u>£1,704</u>	<u>9 1</u>

In addition to the above cash balances, the amount of Stock now invested in Consols is £347 3s., and in New Three per Cents., £141 16s. 9d.

The Library balance in hand is £199 3s. 1d., in addition to the £100 invested in New Three per Cents.

The total liabilities for rent, rates, printing, and current expenses amount to about £100.

The Institution has received legislative recognition in connection with the exercise of the powers of the "Metropolis Management and Building Acts Amendment Act, 1878." The Members will recollect that the 16th Section enacts, that no bye-laws made under the provisions of that Section of the Act, nor any amendment, alteration, or repeal thereof, shall be confirmed by the Secretary of State until the expiration of two months after a copy of the bye-laws, and of the notice of the intention to apply for confirmation of the same, has been delivered at the office of the Institution of Surveyors. By the courtesy of the Metropolitan Board of Works, the Institution was afforded an opportunity of considering the preliminary draft of the proposed bye-laws, and made various suggestions, some of which were adopted by the Board. Other suggestions, not adopted by the Board, but which the Council considered important, were embodied in a communication forwarded by direct invitation to the Secretary of State, by whom the bye-laws are still under consideration. The suggestions of the Institution will probably be of assistance in giving practical form to the extensive changes sought to be effected by means of the Act.

The Council again remind Members and Associates of the obligation, entered into as a condition of election, to give a donation of money or books to the Library, or prepare an original Paper on some subject of interest to the Society. This obligation still remains undischarged in a large number of instances, but it is hoped that this reference to the matter will have the desired effect.

The evening Meetings have been well attended during the Session. Although so much time was occupied by the

discussion of the Papers on Railway Rating, the Council are of opinion that it was profitably bestowed upon the due consideration of this important subject. The result has been the presentation of the various views of those specially acquainted with the question, in a form more complete than they have ever before appeared; and should it (as seems probable) form the subject of legislation, the exhaustive treatment it has here received will be the best available guide in the framing of any alterations of the existing law. The Valuation Bill and the County Government Bill of the present Session do not, as they now stand, present any features of such novelty as to call for further discussion after the exhaustive consideration which the corresponding Bills of 1876 and 1878, respectively received.

The Council beg to acknowledge the constant support which they have received from the Members and Associates during the year, and the many marks of the confidence reposed in them.

Dr.

STATEMENT OF RECEIPTS AND EXPENDITURE

RECEIPTS.							REVENUE					
							£	s.	d.	£	s.	d.
1878.												
286 Members' Subscriptions for 1878, at £3 3s.							900	18	0			
2 " " in advance for 1879, at £3 3s.							6	6	0			
5 " Arrears, at £3 3s.							15	15	0			
										922	19	0
115 Associates' Subscriptions for 1878, at £2 2s.							241	10	0			
2 " " in advance for 1879, at £2 2s.							4	4	0			
3 " Arrears, at £2 2s.							6	6	0			
										252	0	0
9 Students' Subscriptions for 1878, at £1 1s.							9	9	0			
1 " " in advance for 1879							1	1	0			
										10	10	0
												1,185 9
Rent of Offices and Hire of Arbitration Rooms												813 6
Dividends												11 13
Cash in hands of Treasurer and Secretary, January 1st, 1878												75 18

£2,086 7

					CAPITA				
					£	s.	d.	£	s.
10 New Members' Entrance Fees for 1878, at £5 5s.	..	..	..	..	52	10	0		
7 Members' Entrance Fees, Balances on Transfer, at £2 2s.	..	..	..	..	14	14	0		
								67	4 0
16 New Associates' Entrance Fees for 1878, at £3 3s.	..	..	..	..	..	..	..	50	8 0
2 Members' Life Compositions, at £31 10s.	..	..	..	..	..	..	..	63	0 0
									180 12
Cash transferred from Revenue	..	..	..	..	..	..	..	..	527 0
Balance in hands of Treasurer, December 31st, 1877	..	..	..	..	..	..	..	..	11 14
								£719	

											LIBRARY		
											£	s.	
Donations, 1878	..	..	..	..	..	..	..	..	..	..	..	86	15
Dividends	..	..	..	..	..	..	..	..	..	..	..	2	16
Balance in hands of Treasurer, December 31st, 1877	..	..	..	..	..	..	..	..	..	..	..	163	14
											£203	5	

				SUI		
		£	s.	£	s.	d.
Revenue Account						
Capital						
Library						
				2,086	7	
				719	6	
				203	5	
						£3,009 0

				ASSETS AND LIABILITIES		
		£	s.	£	s.	d.
Cash in hands of Treasurer and Secretary						
Value of Furniture and Books						
Invested in New Three per Cents. and Consols						
" " " Library						
Subscriptions and Entrance Fees due, but unpaid at date						
Value of Premises, No. 12, Great George Street						
Fees for Use of Rooms due, but unpaid at date						
				259	2	
				2,141	7	
				375	10	
				100	0	
				77	14	
				5,000	0	
				191	12	
				£3,145	6	

SURVEYORS.

YEAR ENDING DECEMBER 31st, 1878.

Cr.

COUNT.	EXPENDITURE.	£	s.	d.	£	s.	d.
1878.		246	17	6			
Rate, Rates, and Taxes		87	11	7			
Light, and Water		53	18	0			
on Loans					388	7	1
on of Lecture Hall					62	18	8
ry, Postage and Receipt Stamps, Books of Account, Publications, &c.					10	14	10
and Wages					35	0	0
Coffee at Meetings					59	15	4
Old Effects and Housekeeper's Petty Cash Expenses					581	19	6
on of Transactions—Printing and Lithography		203	18	0	9	7	6
Covers and Binding		14	18	8	16	16	10
Reporting		37	16	0			
		256	12	3			
Less Sale of ditto		54	16	6			
Printing					201	15	9
on to Paris					22	18	6
ered to Capital Account for Furniture and Redemption of Bonds					87	5	0
hands of Secretary		20	0	0	527	0	0
„ Treasurer		62	8	6			
					82	8	6
					£2,086	7	6

COUNT.	£	s.	d.
and Fittings	116	4	3
on of Bonds	200	0	0
in hands of Treasurer	400	0	0
	3	2	4
	£719	6	7

COUNT.	£	s.	d.
of Books	29	14	9
in hands of Treasurer	178	11	2
	£203	5	11

RY.	£	s.	d.
	2,003	19	0
	716	4	3
	29	14	9
in hands of Treasurer and Secretary	259	2	0
	£3,009	0	0

LIABILITIES.	£	s.	d.
arter's Rent to Christmas, 1878	62	10	0
ousekeeping, Printing, and various Accounts	300	0	0
nture Bonds at £25 each	750	0	0
	7,092	16	8

Examined with the Books and Vouchers, and found correct.

ARTHUR GARRARD.
ROBERT VIGERS.

£8,145 6 3

APPENDIX TO VOL. XI.

Obituary.

GEORGE FELTON (Member), of Bryn y bia, Llandudno, was born 2nd July, 1828. He carried on a business for many years as Architect, Surveyor, and Land Agent at Llandudno, North Wales. He was Surveyor to the Mostyn Estate for a period of 25 years, and Town Surveyor of Llandudno for 24 years. Mr. Felton took a prominent part in obtaining the Llandudno Improvement Act, 1854, and in promoting the drainage scheme of 1857, and was largely concerned in designing and carrying out many important local improvements.

He died on the 4th of September, 1878.

EDMUND RUSHWORTH (Member) was born in 1803, and in the year 1819 was articled to the late Mr. STEVENS, of the Old Jewry. About the year 1830, he commenced business in Argyll Street in partnership with Mr. JARVIS; but some three years later, having purchased the business of the late Mr. F. SQUIBB, he and his partner removed to the offices previously occupied by that gentleman in Savile Row. Here the firm was joined, in 1862, by the late Mr. ABBOTT, and subsequently, on the retirement of Mr. JARVIS, by Mr. E. W. RUSHWORTH; after which the business was carried on under the style of RUSHWORTH, ABBOTT, and RUSHWORTH.

Mr. RUSHWORTH had a considerable practice and large experience in the valuation of property under the various

Railway and Metropolitan Improvement schemes, and, during the construction of the Charing Cross Railway, made a large number of valuations, under the 85th Section of the Lands' Clauses Act. Mr. RUSHWORTH was one of the directors of the Old Auction Mart, and acted as Surveyor to Lord FITZHARDINGE's Berkeley Square Estate, and the Clarges Street Estate of Sir NELSON RYCROFT. He died somewhat suddenly, on the 29th of January, 1879, in the 76th year of his age.

JOHN TAYLOR (Associate) was born in 1820, and resided for many years at Earsdon, in Northumberland. Descended from a family long intimately connected with the coal trade, both in Northumberland and Durham, he had special opportunities for qualifying himself for the profession of Mining Surveyor, which he adopted and pursued with much success in after life. Soon after the commencement of his business, he succeeded in establishing a reputation which was constantly increasing to the time of his death. Mr. TAYLOR held various important appointments, being Mineral Agent to the DUKE OF NORTHUMBERLAND, LORD HASTINGS, COLONEL TOWNLEY, and other large landowners. In these capacities he was very widely known throughout the north of England; and there was no one whose opinion upon difficult questions of engineering relating to collieries was received with greater confidence than that of Mr. TAYLOR. Quiet and unassuming in his demeanour, he was respected and esteemed by all who knew him, and he commanded the entire confidence of those who availed themselves of his practical ability.

Mr. TAYLOR had been unwell for some time previous to his death, but latterly his illness assumed a form which rendered his recovery hopeless. His death took place at his

residence at Earsdon, on Saturday, the 1st of February, 1879, in the 60th year of his age.

JULIAN HORN TOLMÉ (Associate) was born on the 23rd January, 1836. He was articled in 1855 to Messrs. **LOCKE & ERRINGTON**, the eminent Engineers, with whom he subsequently remained for some years as an assistant. In 1862, Mr. **TOLMÉ** entered into partnership with Mr. **GALBRAITH**, with whom he continued associated until 1869, when the partnership came to an end.

Mr. **TOLMÉ** was concerned in several important engineering works, among others in the Thames Valley Railway, the Mid Hants Railway, the Poole and Bournemouth Railway, and several foreign lines.

He died on the 25th December, 1878, at Lindfield, Sussex, in the 43rd year of his age.

JOHN THOMAS WOODHOUSE (Member) was the eldest son of Mr. **J. WOODHOUSE**, of Overseal, Leicestershire, and was educated at Repton School. After leaving school he was articled to Mr. **JOHN TWIGG**, of Chesterfield. Mr. **WOODHOUSE** commenced business about the year 1835, as a Civil Engineer and Mining Surveyor, at Ashby-de-la-Zouch, and soon afterwards became Engineer to Lord **HASTINGS'** Moira and Gresley Collieries, and subsequently to many other important collieries in various parts of the kingdom. In 1856, Mr. **WOODHOUSE** entered into partnership with Mr. **P. JEFFCOCK**, who some years afterwards lost his life at the disaster at the Oaks Colliery. Mr. **WOODHOUSE** was one of the Royal Commissioners appointed in 1866 to report upon the coal supply of this kingdom, and acted in various other public capacities on important occasions.

He was a man of singular energy of character and great natural sagacity, which, united with most genial manners and transparent honesty of purpose, secured for him the respect and regard of a very large circle of clients and friends. Mr. WOODHOUSE died suddenly at Scarborough, on the 27th of September, 1878, in the 78th year of his age.

LIST OF DONATIONS AND CONTRIBUTIONS TO JUNE 1st, 1879.

DONATIONS OF BOOKS, MAPS, &c.

DONORS.	TITLE OF WORK.
<i>Agricultural Gazette</i> , Editor of the	{ "The Agricultural Gazette," 1878-79.
<i>Architect</i> , Editor of the	"The Architect," 1878-79.
Benedict, E.	{ Paper on "Cast Iron Pipes." By E. Benedict.
<i>Builder</i> , Editor of the	"The Builder," 1878-79.
<i>Builder's Weekly Reporter</i> , Editor of the	{ "The Builder's Weekly Reporter," 1878-79.
<i>Building News</i> , Editor of the	"The Building News," 1878-79.
Burnell, E. H.	{ "Rocque's Map of the Environs of London, 1745." In mahogany roller box.
Cargill, T.	{ "The Strains upon Bridge Girders and Roof Trusses." By T. Cargill.
Castle, W. H. B.	{ "A Practical Treatise on the Law of Rating." By E. J. Castle.
Estate Exchange, Committee of the	{ Index to the "Estate Exchange Registers," 1878-79.
Farmers' Club, The	"Journal," 1878-79.
<i>Field</i> , Editor of the	"The Field," 1878-79.
Hedley, T. F.	{ "Local Taxation and the Rating of Machinery." By T. F. Hedley.
<i>Horticulture, Journal</i> of, Editor of the	{ "The Journal of Horticulture," 1878-79.
Horwood, J.	{ "Philosophical Transactions of the Royal Society of London," for the years 1846 to 1852 inclusive.
Howard, J. K., The Hon.	{ "Replies to Questions in relation to the Woods and Forests of Canada, and their Economic Uses and Properties."
Humbert, C. F.	{ "The Quarterly Journal of the Geological Society." Nos. 75, 85, 86, 94, 95, 115, 116, 118, 120, 121, and 126 to 136 inclusive, in continuation of previous Donations.

DONORS.	TITLE OF WORK.
Institution of Civil Engineers	{ "Minutes of Proceedings." Vols. LII., LIII., LIV., and LV.
Institution of Mechanical Engineers	{ "Proceedings," 1878-79.
<i>Land Agents' Record</i> , Editor of the	{ "The Land Agents' Record," 1878-79.
Liverpool Architectural Society	{ "Proceedings," 1878-79.
McKie, H. U.	{ "Report to the Council of the City of Carlisle on the subject of Sewage Irrigation." By H. U. McKie, City Surveyor.
Michael, W. H., Q.C.	{ "Address on Health." By W. H. Michael, Q.C.
North of England Institute of Mining and Mechanical Engineers	{ "Transactions." Vol. XXVII., 1877-78.
Ridley, G.	{ "The Corn and Cattle Producing Districts of France." By G. G. Richardson. "The Fenland, Past and Present." By S. H. Miller and S. B. J. Skertchly.
Royal Agricultural Society of England	{ "Journal." Vol. XIV., part 2; vol. XV., part 1.
Royal Institute of British Architects	{ "Transactions," 1878-79.
Société des Géomètres	"Journal," 1878-79.
Statistical Society	{ "Journal." Vol. XLI., parts 1, 2, 3, 4; and vol. XLII., part 1.
Williams, R. P.	{ "The Economy of Railway Working." By R. P. Williams.

CONTRIBUTIONS IN MONEY TO LIBRARY FUND,

From June 1st, 1878, to June 1st, 1879.

	£	s.	d.
Bevan, W.	2	2	0
Buck, A.	5	5	0
Davis, J.	3	3	0
Downing, F.	2	2	0
Emmanuel, B.	3	3	0
Harrington, G. F.	2	2	0
Leane, G. H.	5	5	0
Martin, C. W.	2	2	0
Meston, J. F.	5	5	0
Neame, F., Jun.	2	2	0
Powell, E.	3	3	0
Pownall, G. H.	2	2	0
Rees, W. G.	2	2	0
Rowe, R. R.	2	2	0
Wilson, R. J.	3	3	0

INSTITUTION OF SURVEYORS.

List of Members, June 1st, 1879, with Council for Session 1879-80.

*of Election
of Transfer.*

Honorary Members.

1874, Apr. 13	BEDFORD, HIS GRACE THE DUKE OF	81 & 82, Eaton Square, S.W.
1878, Nov. 11	BUCAILLE, EUGÈNE	168, Boulevard de Strasbourg, Havre, France.
1875, Mar. 15	CAIRD, JAMES, C.B. . . . {	Tithe and Inclosure Commission Office, St. James's Square, S.W.
1877, Jan. 15	CONSTABLE, JOHN, The Rev. . .	
1871, Jan. 30	GORE, CHARLES ALEXANDER, The HONORABLE	The Agricultural College, Cirencester. Office of Woods, &c., 1, Whitehall Place.
1871, Jan. 30	HOWARD, JAMES KENNETH, The HONORABLE	Office of Woods, &c., 1, Whitehall Place.
1879, Jul. 26 } 1871, Feb. 27 }	LEACH, GEORGE ARCHIBALD, { LIEUT.-COLONEL {	Tithe and Inclosure Commission Office, St. James's Square, S.W.
1878, Nov. 11	LEFÈVRE, FRANÇOIS ETIENNE . .	
1878, Jun. 23 } 1877, May 14 }	LLOYD, JOHN HORATIO	100, Lancaster Gate, W.
1872, Jan. 15 } 1872, Apr. 22 }	RIDLEY, GEORGE {	Tithe and Inclosure Commission Office, St. James's Square, S.W.

*The names of those Members and Associates who have paid Life Composition
Fees are distinguished thus **

*of Election
of Transfer.*

Members.

1868, Jun. 15	ADAMS, CHARLES FREDERICK . .	Barkway, Herts.
1872, Dec. 9	APPERLEY, WILLIAM HAVARD . .	Hereford.
1869, May 3	ARDING, CHARLES BENNETT . .	22, Surrey Street, Strand, W.C.
1875, Nov. 8	AUSTIN, RUSSELL GARDINER . .	The Wash, Hertford.
1877, Mar. 12	BALLS, JAMES MAYHEW	Castle Hedingham, Essex.
1868, Aug. 17	*BARRY, CHARLES	1, Westminster Chambers, Victoria Street, S.W.

*Date of Election
and of Transfer.*

MEMBERS.

1868, Aug. 3	BEADEL, FREDERICK. . . .	121, Pall Mall, S.W.
1868, Jun. 15	BEADEL, WILLIAM JAMES . . .	97, Gresham Street, E.C.
	<i>(Vice-President)</i>	
1868, Nov. 2	*BEAUMONT, GEORGE, JUN. . .	East Bridgford, near Nottingham.
1876, Apr. 24	BECKETT, WILLIAM	Oulton Park Farm, near Tarporley, Cheshire.
1879, Jan. 6	BEDELLS, CHARLES KING . . .	6, John Street, Bedford Row, W.C.
1873, Dec. 8	BEESTON, FREDERICK	30, Lincoln's Inn Fields, W.C.
1875, Mar. 1	BENNETT, THOMAS OATLEY . . .	Bruton, Somerset.
1873, Feb. 24	BEWICK, THOMAS JOHN	4, Broad Sanctuary, S.W.
1869, Mar. 22	BIDWELL, CHARLES	Ely, Cambridgeshire.
1875, Apr. 12	BINGHAM, REUBEN	5, Bolton Street, Piccadilly.
1868, Oct. 26	BINNIE, THOMAS	207, Hope Street, Glasgow.
	<i>(Member of Council)</i>	
1868, Aug. 10	BIRD, JAMES BINFIELD	West Cowes, Isle of Wight.
1870, Feb. 7	BLOUNT, WILLIAM	Orchehill House, Gerard's Cross, Bucks.
1874, Feb. 2	BOLAM, CHARLES GODFREY . . .	38, Parliament Street, S.W.
1874, Feb. 2	BOLAM, HARRY GEORGE	Ingestre, Stafford.
1876, May 8	BOLAM, WILLIAM THOMAS . . .	{ Cross House, Westgate Road, Newcastle-upon-Tyne.
1875, Dec. 13	*BOLDEN, JOHN LEONARD . . .	Tehidy Office, Camborne, Cornwall.
1869, May 3	BOND, ERASMUS	22, Surrey Street, Strand, W.C.
1868, Jun. 15	BONNY, JAMES RIPPOTH	47, Old Broad Street, E.C.
1868, Jul. 13	BOWLER, WILLIAM ANTHONY . .	Castle Chambers, Opie Street, Norwich.
1874, Dec. 7	BROOK, JAMES	{ 28, John William Street; and Spring Wood, New Mill, Huddersfield.
1874, Dec. 7	BROUGHTON, JOHN	South Shields, Durham.
1874, Jan. 5	BROWN, DANIEL JOHNSON . . .	61, Lincoln's Inn Fields, W.C.
1868, Jul. 13	BROWN, GEORGE	Roborough House, Barnstaple, Devonshire.
1871, Dec. 18	BROWN, JOHN	Rose Hill, Chesterfield.
1869, Feb. 22	BROWN, THOMAS FORSTER . . .	Guildhall Chambers, Cardiff.
1869, Feb. 8	BROWN, WILLIAM	Tring, Herts.
1874, Apr. 13	BRYANT, ARTHUR JOHN	3, Old Palace Yard, Westminster, S.W.
1870, Dec. 12	BUCHAN, THOMAS	24, Bank Street, Dundee.
1868, Jul. 13	BUCK, ALBERT	Worcester.
1871, Dec. 18	BUCKLAND, FRANK BOWRY . . .	Windsor.
1868, Jun. 15	BUCKLAND, VIRGOE	66, Cannon Street, E.C.
	<i>(Member of Council)</i>	
1868, Jul. 20	BURNEILL, EDWARD HENRY . . .	32, Bedford Row, W.C.
1875, Feb. 1	*BURROUGHES, THOMAS HENRY .	Ketton, Rutlandshire.
A. '68, Aug. 10 } M. '75, Mar. 15 }	BUTLER, ARTHUR	7, Staple Inn, W.C.
1874, Jan. 5	BUZZARD, ALFRED LINDSEY . .	22, Surrey Street, Strand, W.C.
1869, Jul. 12	CADLE, CLEMENT	Clarence Street, Gloucester.
1876, Apr. 24	CASSELL, JAMES ROBERT	11, Billiter Square, E.C.
1874, Jan. 19	CASTLE, HENRY JAMES, SEN. . .	5, Chancery Lane, W.C.

*date of Election
and of Transfer.*

MEMBERS.

1873, Jan. 13	CASTLE, ROBERT	Merton Street, Oxford.
1872, Mar. 11	CASTLE, WILLIAM HENRY BALDWIN	5, Chancery Lane, W.C.
1870, Dec. 12	CATES, ARTHUR	7, Whitehall Yard, S.W.
1875, Jan. 4	CAVE, HENRY H.	Brigg, Lincolnshire.
1870, Jan. 10	CHANCELLOR, FREDERICK . .	Chelmsford, Essex; and 8, Finsbury Circus, E.C.
1868, Jun. 15	CHAPMAN, GEORGE	14, Cockspur Street, S.W.
1873, Jan. 27	CHEFFINS, CHARLES RICHARD .	23, Abingdon Street, S.W.
1868, Jul. 6	CHINNOCK, FREDERICK GEORGE	11, Waterloo Place, S.W.
1868, Jun. 15	CLARKE, THOMAS CHATFEILD .	63, Bishopsgate Street Within, E.C.
	(Member of Council)	
1868, Jun. 15	CLIFTON, EDWARD NORTON . .	7, East India Avenue, E.C.
	(Past-President)	
1868, Jun. 15	CLUTTON, HENRY	9, Whitehall Place, S.W.
1868, Jun. 15	CLUTTON, JOHN	9, Whitehall Place, S.W.
	(Past-President)	
A. '68, Jul. 13 } M. '75, May 10 }	CLUTTON, JOHN HENRY	9, Whitehall Place, S.W.
A. '68, Jul. 6 } M. '74, Apr. 13 }	CLUTTON, RALPH	9, Whitehall Place, S.W.
A. '70, Jan. 10 } M. '75, Dec. 13 }	CLUTTON, RALPH WILLIAM . .	Hartswood, Reigate, Surrey.
1868, Jul. 13	CLUTTON, ROBERT GEORGE . .	9, Whitehall Place, S.W.
1869, Jan. 11	CLUTTON, WILLIAM JAMES . .	The Mount, York.
1868, Jun. 15	COBB, ROBERT LAKE	Higham, Kent.
1868, Jul. 20	COLLIER, JOHN	Salters' Hall, St. Swithin's Lane, E.C.
1868, Aug. 17	COLLINS, HENRY HYMAN . . .	61, Old Broad Street, E.C.
1869, Apr. 5	COMELY, JOHN GILL	Winchester, Hants.
1876, Apr. 24	COOTE, GEORGE	Smeetham Hall, Sudbury, Suffolk.
1872, Jan. 29	COUCHMAN, CHARLES	6, Waterloo Street, Birmingham.
1878, Jan. 28	COWGILL, WILLIAM	Bradford.
1868, Jun. 15	CRAWTER, HENRY	5, Bedford Row, W.C.
1869, Jan. 25	CRAWTER, JOHN	Cheshunt, Herts.
1869, Jan. 25	CRICKMAY, GEORGE RACKSTROW.	St. Thomas Street, Weymouth.
1874, May 11	CRONK, EDWYN EVANS	Sevenoaks, Kent.
1876, Jan. 10	CROSS, JOHN	78, Cross Street, Manchester.
1873, Apr. 21	CROSS, WILLIAM STEPHENS . .	53, Charing Cross, S.W.
1868, Jun. 15	CURREY, HENRY	37, Norfolk Street, W.C.
1877, Apr. 16	CURTIS, ROBERT LEABON . . .	15 and 16, Blomfield Street, E.C.
1879, Apr. 28	CURTIS, SAMUEL PERKINS . . .	15 and 16, Blomfield Street, E.C.
1878, Apr. 29	DARLEY, WILLIAM	Castle Eden, Durham.
1868, Jul. 13	DAVID, EDWARD	Llandaff, Glamorganshire.
1873, Feb. 10	DAVIES, JOHN MORGAN	Froodvale, Llandilo, Carmarthenshire.
1868, Jun. 15	DENT, JOHN	34, Great James Street, W.C.
1868, Jun. 15	DENTON, JOHN BAILEY	22, Whitehall Place, S.W.

*Date of Election
and of Transfer.*

MEMBERS.

A. 1869, Feb. 8 } M. 1878, Feb. 25 }	DODGSON, WILFRED LONGLEY .	The Moor, Ludlow.
1878, Jan. 14	DOWNING, FREDERICK	7A, Whitehall Yard, S.W.
1868, Nov. 9	DOWNES, HENRY	Basingstoke, Hants.
1873, Feb. 10	DREW, HENRY	Exeter.
1872, Feb. 26	DREW, JOHN	{ 9, Queen Street, Exeter; and Powderham Castle, near Exeter.
A. 1876, Jan. 10 } M. 1878, Feb. 25 }	DRIVER, CHARLES WILLIAM	4, Whitehall, S.W.
1868, Jun. 15	DRIVER, ROBERT COLLIER . (Member of Council)	4, Whitehall, S.W.
1874, Jan. 5	DUNCH, CHARLES.	{ District Board Offices, White House, Commercial Road, E.
1871, Jan. 30	DUNLOP, ALEXANDER MILNE .	3, Old Palace Yard, Westminster, S.W.
1868, Jun. 15	DYMOND, FRANCIS WILLIAMS .	Exeter.
1868, Aug. 3	EASTON, WILLIAM	6, Hammet Street, Taunton, Somersetshire.
1868, Aug. 3	EILOART, FERDINAND	40, Chancery Lane, W.C.
1875, Feb. 1	ELLIS, JOHN WHITTAKER, (Alder- man)	{ 5, Lancaster Place, W.C., and 18, Old Broad Street, E.C.
1872, Feb. 26	EMMANUEL, BARROW	2, Finsbury Circus, E.C.
A. 1874, Feb. 16 } M. 1876, Nov. 27 }	EVANS, WILLIAM ERNEST . .	The Priory, Shrewsbury.
1868, Aug. 3	EVE, WILLIAM	10, Union Court, Old Broad Street, E.C.
1873, May 5	EVES, GEORGE	Uxbridge, Middlesex.
1879, Mar. 31	FARRAR, JAMES	12, Market Street, Bury, Lancashire.
1873, Jan. 27	FIELD, FRANCIS HAYWARD . .	Merton Street, Oxford.
1872, Mar. 11	FOSTER, CHARLES ROLLS . . .	54, Pall Mall, S.W.
1873, Dec. 8	FOWLER, WILLIAM	23, Waterloo Street, Birmingham.
1874, Jan. 5	FOX, FREDERICK FRANCIS . .	Melbourne, near Derby.
1875, Jan. 18	FRY, GEORGE FREDERICK . .	5, Tavistock Street, Covent Garden, W.C.
1868, Jun. 15	FULLER, FRANCIS.	12, Montague Villas, Richmond Hill, S.W.
1876, Jan. 10	GAIRDNER, EDWARD JAMES . .	42, University Street, W.C.
1868, Jul. 6	GALSWORTHY, FREDERICK THOMAS	11, Waterloo Place, S.W.
1868, Sep. 28	GARDINER, WILLIAM JAMES . .	110, Great Russell Street, W.C.
1877, Feb. 12	GERMAN, WILLIAM	Measham, Atherstone, Derbyshire.
1875, Feb. 1	GILBERT, WILLIAM HENRY } SAINSBURY	9, Old Jewry, E.C.
1869, Dec. 6	GIRDWOOD, JAMES	49, Pall Mall, S.W.
1876, Jan. 24	GLASIER, GEORGE HENRY } BROUGHAM	41, Charing Cross, S.W.
A. 1873, May 19 } M. 1878, Mar. 11 }	GORE, SPENCER W.	16, Whitehall Place, S.W.
1873, Feb. 10	GOUTHWAITE, RICHARD	Lumby, near South Milford, Yorkshire.
1875, Jan. 10	GRAHAM, WILLIAM	Victoria Chambers, Newport, Monmouthshire.

date of Election
and of Transfer.

MEMBERS.

1875, Jan. 18	GREY, CHARLES GREY . . .	55, Parliament Street, Westminster, S.W.
1876, Mar. 28	GWYTHER, WILLIAM WARLOW . .	12, Beaufort Buildings, Strand, W.C.
1874, Mar. 16	HADDOCK, ROLAND	21, High Street, Croydon, Surrey.
1878, Dec. 9	HALL, JOHN GEORGE	33, Maresbro' Road, West Kensington, W.
1868, Jul. 13	HALL, RICHARD	37, Great George Street, S.W.
1868, Aug. 3	HALL, ROBERT WRIGHT (deceased)	37, Great George Street, S.W.
1875, Jan. 4	HARDING, JOSEPH	49, Lune Street, Preston.
1875, Dec. 17	HARDING, WILLIAM DANIEL . .	16, St. Paul's Churchyard, E.C.
1871, Feb. 23	HART, WILLIAM FREDERICK . .	Lambeth Waterworks, Brixton Hill, S.W.
1868, Jul. 13	HARVEY, JOHN	6, Victoria Place, Haverfordwest, Pembrokeshire.
1868, Jul. 13	HARVEY, RICHARD HART . . .	6, Victoria Place, Haverfordwest, Pembrokeshire.
1873, May 19	HASLAM, DRYLAND	17, Friar Street, Reading.
1868, Jul. 6	*HAYWOOD, WILLIAM	Guildhall, London, E.C.
1877, Apr. 30	HEATH, WILLIAM HENRY . . .	181, Bishopsgate Street Without, E.C.
1871, Jan. 16	HEDLEY, THOMAS FENWICK . .	Sunderland.
1870, Jan. 10	HILLIARD, GEORGE BRIDGE . .	Chelmsford, Essex.
1868, Jul. 13	HIPPISLEY, EDWIN	Chamberlain Street, Wells, Somersetshire.
1878, Dec. 9	HOBGEN, FRANCIS NEALE . . .	East Street, Chichester.
1878, Dec. 9	HODSON, GEORGE	Town Hall, Loughborough.
1874, Nov. 16	HOLDEN, ISAAC	64, Cross Street, Manchester.
1874, Nov. 16	HOLDEN, JOHN	64, Cross Street, Manchester.
1868, Jun. 15	HORSEY, THOMAS	11, Billiter Square, E.C.
1869, Feb. 22	HORSFALL, RICHARD	Halifax, Yorkshire.
1869, Apr. 5	HORWOOD, JAMES	10, Paternoster Row, E.C.
1868, Sep. 23	HUDSON, WILLIAM	19, Bennet's Hill, E.C.
1868, Nov. 2	HUMBERT, CHARLES F.	Watford, Herts.
1869, Feb. 22	HUMPHREYS, CHARLES	61, Leadenhall Street, E.C.
1868, Jun. 15	HUNT, SIR HENRY ARTHUR, C.B.	45, Parliament Street, Westminster, S.W.
1874, May 11	HUNT, HENRY ARTHUR, JUN. . .	3, Victoria Street, Westminster, S.W.
1869, Mar. 8	HUNT, JOSIAH	6, Queen Anne's Gate, Westminster, S.W.
1868, Jun. 15	HUSKINSON, THOMAS	Epperstone, Nottingham.
	(Past-President)	
1874, Jan. 19	HUSKINSON, WILLIAM LAMBE . .	The Manor House, Epperstone, Nottingham.
1869, Feb. 22	HUSSEY, GEORGE HENRY . . .	The Green, High Wycombe, Bucks.
1868, Jun. 15	L'ANSON, EDWARD	7A, Laurence Pountney Hill, E.C.
	(Vice-President)	
1869, Jul. 26	JACKSON, FREDERICK	Nottingham.
1876, Apr. 3	JEMMETT, ALEXANDER	Murrell Hill Farm, Binfield, Bracknell, Berks.
A. '69, Apr. 5 } M. '78, Feb. 25 }	JONAS, HENRY	4, Whitehall, S.W.
1868, Jul. 27	JONAS, JOHN CARTER	27, Market Hill, Cambridge.
1873, Apr. 21	JONES, HENRY PARR	Portway House, Warminster.

*Date of Election
and of Transfer.*

MEMBERS.

1869, Mar. 22	KING, WILLIAM DAVID . . .	Farlington Farm, Havant, Hants.
1868, Sep. 28	KNOOLYS, JAMES EDWARD . . .	Fitzhead Court, Taunton, Somerset.
1871, Feb. 27	KNOWLES, WILLIAM . . .	Albion Chambers, King Street, Gloucester.
1868, Aug. 3	LAMBERT, WILLIAM . . .	1, New Broad Street, E.C.
1876, Apr. 21	LANE, CECIL NEWTON . . .	Whiston Hall, Shifnal, Salop.
1868, Nov. 9	LAURANCE, JOHN, JUN. . .	Warmington, near Oundle, Northamptonshire.
1868, Jul. 20	LAVENDER, JOSEPH . . .	26, Bedford Row, W.C.
1878, Nov. 11	*LEANE, GEORGE HENRY . . .	23, Queen Anne's Gate, S.W.
1868, Jun. 15	LEE, CHARLES . . .	8, Adelphi Terrace, W.C.
1874, Feb. 2	LEE, FREDERICK . . .	6, Great College Street, Westminster, S.W.
1878, Mar. 25	LEE, WILLIAM WARD . . .	33, Finsbury Circus, E.C.
1870, Feb. 7	LEES, JOHN . . .	Reigate, Surrey.
1875, Jan. 18	LLEWELLIN, DAVID . . .	Pontypool, Monmouthshire.
1875, Mar. 15	LOFTS, HENRY . . .	99, Mount Street, Grosvenor Square, W.
1876, Feb. 7	LOVEJOY, ALFRED . . .	7, Poultry, E.C.
1868, Aug. 3	LOVEJOY, WILLIAM . . .	55, Chancery Lane, W.C.
1869, Jul. 12	LYE, JOHN GAUNT . . .	8, Lancaster Place, W.C.
1868, Nov. 2	MACAULAY, COLIN ALEXANDER .	Leicester.
1869, Jan. 25	MANN, CHARLES JOHN . . .	29, Great George Street, S.W.
1875, Jan. 18	MANN, ROBERT WILKS . . .	7, Hobart Place, S.W.; and White Hall, Hayes.
1869, Mar. 29	MARR, JAMES . . .	8, Adam Street, Adelphi, W.C.
1876, Mar. 20	*MARTIN, GILSON . . .	Tavistock.
1875, Jan. 4	MARTIN, HOWARD . . .	145, High St., Croydon; & The Ferns, E. Croydon.
1870, Feb. 7	*MARTIN, JAMES . . .	Wainfleet, Boston, Lincolnshire.
<i>(Member of Council)</i>		
1876, May 8	MARTIN, JOHN MAY . . .	Lower Musgrave House, Exeter.
1875, May 10	MASON, WILLIAM LUDLAM . . .	The High Holme, Louth, Lincolnshire.
1868, Jun. 15	MATHEWS, JEREMIAH . . .	15, Waterloo Street, Birmingham.
1868, Jun. 15	*MATHEWS, WILLIAM . . .	15, Waterloo Street, Birmingham.
1876, Feb. 7	MCCALL, GEORGE . . .	33, Victoria Chambers, Market Place, Blackburn.
1877, Feb. 12	MINTER, WILLIAM . . .	81, Bondgate, Darlington.
1874, Dec. 7	MOORE, EDWARD WELLS . . .	Middle Claydon, Winslow.
1876, Nov. 13	MORRIS, JOHN WARRINGTON . .	Gracechurch Buildings, Gracechurch Street, E.C.
1878, Dec. 9	MURPHY, EDMUND . . .	Dunfanaghy, Letterkenny, Ireland.
1874, Apr. 13	NAYLOR, ARTHUR MILLINGTON .	3, Old Palace Yard, Westminster, S.W.
1868, Nov. 2	NEALE, CHARLES JAMES . . .	High Oakham, Mansfield, Notts.
1879, Feb. 3	NEAME, FREDERICK, JUN. . .	Macknade, Faversham, Kent.
1872, Dec. 9	NEWMAN, FRANCIS . . .	Ryde, Isle of Wight.
1875, Jan. 18	NICHOLS, DANIEL CUBITT . . .	7, Howard Street, Strand, W.C.
1872, Jan. 29	NISBET, RALPH P. . .	Chester Hill House, Belford, Northumberland.
1873, Apr. 21	NOBLE, JOHN . . .	Woodhall, Herts.

<i>Year of Election or Transfer.</i>	MEMBERS.	
1875, Apr. 26	NOCKOLDS, MARTIN	Saffron Walden, Essex.
1876, Mar. 20	NORMAN, JAMES MAURICE	Uxbridge, Middlesex.
1869, Mar. 8	NORMAN, WILLIAM	8, Spring Gardens, S.W.
1868, Jul. 20	NORTH, GEORGE	22, Whitehall Place, S.W.
1871, Feb. 13	NOTLEY, RICHARD ALBERT	80, Cornhill, E.C.
1868, Jul. 6	*OAKLEY, CHRISTOPHER	10, Waterloo Place, S.W.
1877, Apr. 30	OAKLEY, WILLIAM	29, Charles Street, St. James's Square, S.W.
1869, Mar. 8	OWEN, THOMAS RULE	High Street, Haverfordwest, Pembrokeshire.
1872, Dec. 9	PARSONS, HENRY	Haslebury Plucknett, Crewkerne, Somerset.
1875, Nov. 8	PATERSON, ROBERT	10, Hanover Street, Edinburgh.
1870, Dec. 12	PAXTON, JONAS	Bicester, Oxfordshire.
1868, Jun. 15	PENFOLD, JOHN WORNHAM	29, Great George Street, Westminster, S.W.
	<i>(Honorary Secretary)</i>	
1876, May 8	PEPPERCORN, JOHN HUTCHINSON	Eaton Socon, Bedfordshire.
1876, Feb. 21	PHILLIPS, FREDERICK HAMILTON	Newtown, Montgomeryshire.
1873, Dec. 8	PINK, CHARLES	Winchester, Hants.
1870, Jan. 24	POUNDLEY, JOHN EDWARD	Black Hall, Kerry, Montgomeryshire.
1877, May 14	POWELL, EVAN	Broomcliffe, Llanidloes.
1877, Dec. 10	POWNALL, GEORGE HARRY	29, Parliament Street, S.W.
1872, Nov. 25	PRICKETT, WALTER BELLSON	62, Chancery Lane, W.C.
1877, May 14	PRIOR, RICHARD JAMES	Canterbury, and 61, Lincoln's Inn Fields, W.C.
1870, Jan. 24	RAWLENCE, GEORGE	Salisbury, Wilts.
1870, Feb. 7	RAWLENCE, JAMES	Salisbury, Wilts.
1868, Oct. 26	RAYNBIRD, HUGH EDWARD	Basingstoke, Hants.
1879, Apr. 28	REES, WILLIAM GEORGE	Holly House, Newport, Monmouthshire.
1873, Nov. 11	REID, PATRICK SANDEMAN	20, John Street, Adelphi, W.C.
1876, Dec. 18	RICHARDSON, JOHN	Methley Park, Leeds.
1873, Feb. 10	RICKMAN, THOMAS MILLER	8, Montague Street, Russell Square, W.C.
1868, Jun. 15	RIGDEN, RICHARD HENRY	The Close, Salisbury, Wilts.
1868, Aug. 17	ROBERTS, RICHARD	15, New Broad Street, E.C.
1879, Mar. 31	ROBINS, EDMUND	5, Waterloo Place, S.W.
1868, Jul. 13	ROBINS, EDWARD COOKWORTHY	14, John Street, Adelphi, W.C.
1872, Dec. 9	*ROBSON, EDWARD ROBERT :	{ 41, Parliament Street, Westminster; and 6, St. Germain's Place, Blackheath, S.E.
1879, Mar. 17	ROBSON, HENRY	
'74, Mar. 2 } '79, Feb. 17 }	ROGERS, SYDNEY JAMES	5, Westminster Chambers, S.W.
'74, Dec. 7. } '76, Jan. 24. }	ROLLESTON, JOHN FOWKE LANCELOT	{ Grey Friars, Leicester.
1868, Aug. 31	ROSSER, WILLIAM	
1873, Apr. 8	*ROWE, RICHARD REYNOLDS	10, Emmanuel Street, Cambridge.
'73, Dec. 8. } '75, Nov. 8. }	RUSHWORTH, EDMUND WALTER	22, Savile Row, W.

*Date of Election
and of Transfer.*

MEMBERS.

1868, Jun. 15	RYDE, EDWARD	29, Great George Street, S.W.
	(<i>Vice-President</i>)	
1876, Jan. 24	SADLER, GEORGE WILLIAM	467, High Street, Cheltenham.
1875, Apr. 26	SANDAY, GEORGE HENRY	Wensley House, Bedale, Yorkshire.
1876, Nov. 27	SANDY, HENRY	Newport Road, Stafford.
1869, Feb. 8	SAUNDERS, CECIL GEORGE	29, Great George Street, S.W.
1869, Feb. 22	SAUNDERS, EDWARD	6, Bishopsgate Street Without, E.C.
1863, Aug. 17	SAVILL, ALFRED	3, St. Helen's Place, E.C.; and Chigwell, Essex.
1879, Jan. 6	SCARGILL, ALFRED	11, East Parade, Sheffield.
1874, Feb. 2	SCARTH, WILLIAM T.	Raby Castle, Darlington.
	(<i>Member of Council</i>)	
1869, Mar. 8	SCOTT, THOMAS COLVILLE	7, Moorgate Street, E.C.
1875, Mar. 1	SEARLE, FRANCIS WILLIAM	Marsh House, Tottenham, Middlesex.
1871, Jan. 16	SEDGWICK, ALFRED OTHWAITE	Watford, Herts; and 49, Bedford Row, W.C.
	(<i>Member of Council</i>)	
1879, Mar. 3	SELBY, CHARLES FREDERIC	5, Westminster Chambers, S.W.
1875, Mar. 1	SHACKEL, GEORGE	12, The Forbury, Reading, Berks.
1876, Mar. 6	SHAW, JOHN	College Place, Derby.
1868, Jul. 13	SHOPPEE, CHARLES JOHN	61, Doughty Street, W.C.
	(<i>Member of Council</i>)	
1875, Apr. 26	SIMONDS, JOHN CABOURN	Fishloft Manor, Boston, Lincolnshire.
1872, Apr. 22	SLATER, GEORGE	Canterbury.
1868, Oct. 26	SMELLIE, THOMAS DAVIES	209, St. Vincent Street, Glasgow.
1863, Aug. 17	SMITH, CHARLES BOVILL	Wickham, Hants.
1868, Jul. 13	SMITH, CHARLES JOHN	94, Cheyne Walk, Chelsea, S.W.
A. '70, Mar. 21 } M. '78, Mar. 11 }	SMITH, CHARLES JOHN	16, Whitehall Place, S.W.
1868, Jun. 15	SMITH, EDMUND JAMES	16, Whitehall Place, S.W.
	(<i>Past-President</i>)	
1872, Feb. 26	SMITH, THOMAS TAYLER	33, Bloomsbury Square, W.C.
1868, Aug. 10	SNOOKE, WILLIAM	6, Duke Street, London Bridge, S.E.
1868, Nov. 9	SOUTHWELL, CHARLES JOSIAH	9, Whitehall Place, S.W.
1868, Jul. 27	SPACKMAN, HENRY	6, Terrace Walks, Bath.
1868, Jun. 15	SQUAREY, ELIAS PITTS	{ 22, Great George Street, S.W.; and The Moot, Downton, Salisbury.
	(<i>Member of Council</i>)	
1871, Feb. 13	ST. QUINTIN, PERRY	37, Threadneedle Street, E.C.
1868, Aug. 17	STANLEY, HENRY	Bury St. Edmunds, Suffolk.
1868, Jun. 15	STATTER, THOMAS	Standhall, Whitefield Manchester.
1877, Jan. 15	STENNING, ALEXANDER ROSE	27, Fenchurch Street, E.C.
1868, Jun. 15	STEPHENSON, CHARLES	45, Parliament Street, Westminster, S.W.
	(<i>Member of Council</i>)	
1876, Jan. 24	STEPHENSON, CHRISTOPHER	Naworth Estate Office, Brampton, Cumberland.
1868, Jul. 27	STEWART, HERBERT THOMAS	3, Victoria Street, S.W.
1868, Jul. 20	STURGE, ROBERT FOWLER	34, Corn Street, Bristol.
1868, Jun. 15	STURGE, WILLIAM	34, Corn Street, Bristol.
	(<i>President</i>)	
1874, Feb. 16	SWORDER, GEORGE EDWARD	Bishop's Stortford, Herts.
1875, Feb. 15	SWORDER, WILLIAM	Stapleford Tawney Hall, near Romford, Essex.

of Election
of Transfer.

MEMBERS.

Feb. 7 } 3, Jan. 28 }	TATHAM, GEORGE HENRY . . .	34, Essex Street, Strand, W.C.
74, Jan. 19	THOMAS, JOSIAH	Athenæum Chambers, Nicholas Street, Bristol.
78, Jan. 14	*THURSFIELD, THOMAS HOWELLS	Barrow, Brosely, Shropshire.
88, Jun. 15	THYNNE, EDWARD LEWIS . . .	11, Great George Street, S.W.
89, Jan. 11	THYNNE, FREDERICK GEORGE . .	11, Great George Street, S.W.
75, Jan. 18	TOLLEY, JAMES	66, Cannon Street, E.C.
77, Jan. 29	TOOTELL, JOSEPH	Maidstone, Kent.
77, Jan. 29	TOOTELL, RICHARD WILLIAM . .	11, Queen Victoria Street, E.C.
76, Apr. 24	TOWER, BROWNLOW RICHARD } CHRISTOPHER }	Hallaton Hall, Uppingham.
88, Jun. 15	TRIST, GEORGE	62, Old Broad Street, E.C.
74, May 11	TROLLOPE, CHARLES BROWN . .	13, Parliament Street, Westminster, S.W.
88, Jun. 15	TRUMPER, RICHARD	23, Lincoln's Inn Fields, W.C.
88, Aug. 8	TUCKETT, PHILIP DEBELL . . .	10A, Old Broad Street, E.C.
78, Dec. 9	TUNLEY, GEORGE	14, Clement's Lane, E.C.
89, Feb. 8	TURNER, WILLIAM	1, Butter Market, Ipswich, Suffolk.
89, May 12	TURNER, WILLIAM WEBB . . .	9, Clinton Place, Seaford, Sussex.
73, Dec. 8 } 78, Nov. 11 }	VENABLES, FREDERICK	62, Chancery Lane, W.C.
86, Feb. 21	VERNON, ARTHUR	Borshams, High Wycombe, Bucks.
86, Jan. 20	VIGERS, ASTLEY	4, Frederick's Place, E.C.
81, Dec. 4	VIGERS, EDWARD, JUN.	38, Parliament Street, Westminster, S.W.
88, Jun. 15	VIGERS, FRANCIS	4, Frederick's Place, E.C.
	<i>(Member of Council)</i>	
88, Jun. 15	VIGERS, ROBERT	4, Frederick's Place, E.C.
82, Dec. 9	VULMIAM, GEORGE	Metropolitan Board of Works, Spring Gardens, S.W.
89, Jan. 25	WARING, THOMAS	St. John's Square, Cardiff.
9, Mar. 8. } 75, Apr. 12. }	WARNER, WILLIAM HENRY . . .	99, Mount Street, Grosvenor Square, W.
88, Jun. 15	WATNEY, DANIEL	62, Old Broad Street, E.C.
	<i>(Member of Council)</i>	
82, May 6	WEALL, JOHN	38, High Street, Watford.
89, Dec. 6	WEBB, GEORGE	Tunstall, Sittingbourne, Kent.
88, Jul. 20	WESTBURY, GILES	Andover, Hants.
88, Nov. 9	WHICHCORD, JOHN	12, Queen Victoria Street, Mansion House, E.C.
84, Apr. 27	WIDNELL, FREDERICK GRAINGER	13, Parliament Street, Westminster, S.W.
80, Feb. 7 } 87, Nov. 13 }	*WIGRAM, JOHN	South Collingham, Newark, Notts.
88, Jul. 20	WILLIAMS, GEORGE BARNES . . .	Frederick's Place, E.C.
870, May 9	WILLIAMS, STEPHEN WILLIAM . .	Rhayader, Radnorshire.
876, Mar. 6	WILLIAMSON, FRANCIS	31, Castle Gate, Nottingham.
888, Aug. 10	WILLMOT, FRANCIS	33, Waterloo Street, Birmingham.
888, Jun. 15	WITHALL, RICHARD AUGUSTUS . .	29, Great George Street, Westminster, S.W.
88, Jun. 15	WOOD, FREDERICK	Albert House, Rugby, Warwickshire.
888, Jul. 13	WOOD, WILLIAM BRYAN	Chippenham, Wilts.
873, Feb. 10	WOODCOCK, RICHARD	20, Darlington Street, Wolverhampton.

Date of Election.

MEMBERS.

1875, Mar. 1	WOODTHORPE, EDMUND. . .	2, Coleman Street Buildings, Moorgate St., E.C.
1868, Jun. 15	WOOLLEY, THOMAS SMITH . .	South Collingham, Newark, Notts.
	(<i>Vice-President</i>)	
A. 1871, Nov. 13 } M. 1877, Jan. 29 }	WOOLLEY, WILLIAM EDWARD .	Loughborough, Leicestershire.
1872, Dec. 9	WRIGHT, WILLIAM EDWARD .	King's Lynn, Norfolk.
1872, Apr. 22	*WRIGHT, WILLIAM	Wollaton, Nottinghamshire.
1876, Feb. 21	YEOMAN, GEORGE DUNDAS . .	Laws House, Turvey, Bedfordshire.

Associates.

Date of Election.

1876, Mar. 20	ACLAND, SIR THOMAS DYKE, } BART., M.P. }	Killerton, Exeter.
1878, Feb. 11	AMBROSE, WILLIAM, Q.C. . .	Westover, West Heath, Hampstead, N.W.
1868, Nov. 2	BADCOCK, PHILIP	9, Whitehall Place, S.W.
1868, Jul. 27	BARRY, JOHN WOLFE	23, Delahay Street, Westminster, S.W.
1875, Dec. 13	BATTEN, JOHN WINTERBOTHAM	3, Harcourt Buildings, Temple.
1876, Dec. 18	BAZALGETTE, CHARLES NORMAN	1, Essex Court, Temple.
1879, Feb. 3	BEALE, JAMES SAMUEL	28, Great George Street, S.W.
1868, Nov. 9	BEAUCHAMP, CHARLES DAVIE .	9, Whitehall Place, S.W.
1878, Feb. 11	BEVAN, WALTER	7, High Street, Shrewsbury.
1869, Feb. 22	BIDDER, GEORGE PARKER, Q.C.	3, Paper Buildings, Temple.
1875, Feb. 1	BIDWELL, SHELFORD	9, Whitehall Place, S.W.
1875, Feb. 1	BIRCH, ROBERT WILLIAM } PEREGRINE }	5, Westminster Chambers, S.W.
1875, Feb. 1	BLAKEWAY, JOHN	5 and 6, Lancaster Place, Strand, W.C.
1878, May 13	BLOSSE, EDWARD F. LYNCH . .	2, Cathedral Road, Cardiff.
1879, Mar. 31	BOODLE, FRANCIS EDWARD . .	4, Whitehall, S.W.
1868, Jun. 23	BRAMWELL, FREDERICK JOSEPH	37, Great George Street, Westminster, S.W.
1870, Dec. 12	CARDALL, FREDERIC WILLIAM .	9, Whitehall Place, S.W.
1869, Jul. 26	CARLISLE, WILLIAM THOMAS .	8, New Square, Lincoln's Inn, W.C.
1870, Feb. 7	CARRITT, ERNEST	4, Lime Street Square, Lime Street, E.C.
1879, Jan. 6	CASSERLEY, SAMUEL WILLIAM .	6, Crown Office Row, Temple.
1871, Feb. 13	CASTLE, EDWARD JAMES . . .	4, Brick Court, Temple.
1870, May 9	CATLING, ROBERT CHARLES . .	Needham Hall, Elm, Cambridgeshire.
1879, May 12	CHAPMAN, JAMES CHARLES . .	58, Lincoln's Inn Fields, W.C.

Election.		ASSOCIATES.	
Nov. 13	CLARKE, DANIEL	Easton Street, High Wycombe, Bucks.	
Feb. 7	CLAYDEN, WALTER	6, Moorgate Street, E.C.	
Jan. 5	COOKE, WILLIAM GEORGE	3, Vine Terrace, York Road, S.E.	
Dec. 18	COX, JAMES PONSONBY, COLONEL	81, Onslow Square, S.W.	
Jan. 10	CRAWLEY, WILLIAM JEEVES	10, Waterloo Place, Pall Mall.	
Mar. 1	CRUSE, EDMUND	Warminster, Wiltshire.	
Mar. 17	CUDLIPP, WILLIAM	62, Old Broad Street, E.C.	
Feb. 15	DALE, JOHN	16, Whitehall Place, S.W.	
Apr. 26	DASHWOOD, FREDERICK LOFTUS	Kirtlington, Oxford.	
Dec. 10	DAVIS, JAMES	31, Charing Cross, S.W.	
Nov. 9	DEAN, HENRY, JUN.	37, Millbrook Road, Brixton.	
Jan. 25	DOWDEN, HENRY JOSEPH	4, Whitehall, S.W.	
Jun. 28	EASTON, EDWARD	9, Delahay Street, S.W.	
Apr. 27	EDWARDS, JOHN, Q.C.	1, Harcourt Buildings, Temple.	
Apr. 16	EDWARDS, JOHN FREDERICK } JAMES	Minety Vicarage, Malmsbury.	
Jan. 20	ELLOART, FREDERICK EDWARD		40, Chancery Lane, W.C.
Feb. 8	FAWCETT, JAMES POGUE	5, Lancaster Place, W.C.	
Feb. 22	FOWLER, JOHN	2, Queen Square Place, S.W.	
Feb. 11	FREEMAN, GEORGE MALLOWS	11, King's Bench Walk, Temple.	
Mar. 11	FRESHFIELD, EDWIN	5, Bank Buildings, E.C.	
Mar. 20	FRESHFIELD, WILLIAM DAWES	5, Bank Buildings, E.C.	
Mar. 12	FULTON, HAMILTON	7, Vigo Street, Regent Street, W.	
Jul. 27	GARRARD, ARTHUR	17, Finsbury Square, E.C.	
Dec. 18	GEDGE, SYDNEY	1, Old Palace Yard, S.W.	
Apr. 28	GEPP, CHARLES BRAMSTON } OSBORNE	Chelmsford, Essex.	
Apr. 8	GEPP, THOMAS MORGAN		Chelmsford, Essex.
Dec. 9	GIBSON, WALTER MATTHEW	37, Great George Street, S.W.	
Feb. 16	GOLDNEY, GABRIEL PRIOR	3, Essex Court, Temple, W.C.	
Feb. 12	GOTTO, FREDERICK EDWARD	New Barnes Road, Ely, Cambridgeshire.	
Jan. 11	GRANTHAM, RICHARD BOXALL	22, Whitehall Place, S.W.	
	(Associate of Council)		
Jan. 5	GRANTHAM, RICHARD FUGE	22, Whitehall Place, S.W.	
Mar. 26	HARDING, EDWARD ERNEST	16, St. Paul's Churchyard, E.C.	
Mar. 26	HARDING, WILLIAM DANIEL, JUN.	16, St. Paul's Churchyard, E.C.	
Jan. 28	HARRINGTON, GEORGE FREDERICK	17, New Bridge Street, Blackfriars, E.C.	
Dec. 18	HARRISON, WILLIAM GEORGE, } Q.C.	11, King's Bench Walk, Temple.	
Dec. 9	HARVEY, JOHN JAMES SATYER		Tunstall, Sittingbourne.

Date of Election.

ASSOCIATES.

1875, Dec. 13	HIGGIN, WILLIAM HOUSMAN, } Q.C.	4, St. James' Square, Manchester.
1875, Jan. 4	HILL, ALEXANDER STAVELEY, } Q.C., M.P., &c., &c. . . .	3, Garden Court, Temple; and Oxley Manor, Stafford.
1870, May 23	HOLLWAY, JOHN GEORGE	Lamb Building, Temple, W.C.
1868, Jul. 20	HORSLEY, RICHARD	11, Bull-and-Mouth Street, E.C.
1869, Feb. 8	HUBBERSTY, HENRY ALFRED . .	Buxton, Derbyshire.
1878, Feb. 10	INGRAM, WALTER FEILDE . . .	89, Chancery Lane, W.C.; and Firle, Lewes.
1870, Jan. 24	JOHNSTON, ANDREW	97, Gresham Street, E.C.
1875, Dec. 13	KAYE, JOHN EDWARD	8, John Street, Adelphi, W.C.
1873, Apr. 21	*KING, WILLIAM	Gas Office, Duke Street, Liverpool.
1874, Feb. 2	LEDGARD, FREDERICK THOMAS } DURELL	4, Elm Court, Temple, W.C.
1868, Jul. 6	LEE, CHARLES WILLIAMS . . .	8, Adelphi Terrace, W.C.
1876, Apr. 3	LEE, GEORGE CANSFIELD . . .	North Eastern Railway, York.
1873, Jan. 27	LERMIT, ALFRED WILLIAM . .	32, Bedford Row, W.C.
1874, Feb. 16	LITTLER, RALPH DANIEL MAKIN- } SON, Q.C.	1, Plowden Buildings, Temple, W.C.
1869, Mar. 4	LOTT, JOSEPH	19, Great George Street, S.W.
1877, May 18	LUCAS, JOSEPH	Tooting Graveney, S.W.
1876, Jan. 15	MARRIOTT, GEORGE WHARTON .	Horstead, Norwich.
1874, Feb. 16	MARRIOTT, WILLIAM THACKERAY, } Q.C.	6, Crown Office Row, Temple, W.C.
1876, Nov. 13	MARTIN, CHARLES WILLIAM . .	{ Barrow-on-Soar, near Loughborough, Leicestershire.
1873, May 13	MAUGHAN, JOSEPH HENRY . . .	9, New Street, Great Grimsby.
1873, Jan. 23	MESTON, JOSEPH FYFE	20, Spring Gardens, S.W.
1879, Jan. 6	MEYSEY-THOMPSON, ALBERT } CHILDERS	4, Paper Buildings, Temple.
1875, Jan. 4	MICHAEL, WILLIAM HENRY, Q.C.	1, Park Prospect, St. James's Park, S.W.
1869, Jan. 25	NASH, ALFRED JAMES	Farnham, Surrey.
1875, Dec. 13	NEVILLE, HENRY WILLIAM . .	{ Broughton Estate Office, 8, John Dalton Street, Manchester.

Election.		ASSOCIATES.	
Feb. 1	NEWMAN, GEORGE GUNNELL	75, Cornhill, E.C.	
Feb. 2	NIXON, SAMUEL	29, Great George Street, S.W.	
Feb. 11	NORRIS, WALTER HENRY	Alban Villa, Watford, Herts.	
Nov. 8	PAIN, COARD SQUAREY	4, Cook Street, Liverpool.	
Apr. 24	PARKER, FREDERICK SEARLE	17, Bedford Row, W.C.	
May 10	PAYNE, WILLIAM PERCY	{ Midland Railway Station, Derby; and 136, Mansfield Road, Nottingham.	
Nov. 11	PAYNE, WILLIAM SETH ROBERT		
Dec. 6	PETRE, HENRY WILLIAM, THE HON.	Springfield, Chelmsford, Essex.	
Feb. 22	PHILBRICK, FREDK. ADOLPHUS, Q.C.	Lamb Building, Temple.	
Jan. 4	PLEDGER, JOSEPH AUGUSTUS	Boreham Lodge, Chelmsford.	
Feb. 16	POWELL, REGINALD HENRY	Lewes, Sussex.	
Feb. 27	QUICK, JOSEPH, JUN.	{ 29, Great George Street, S.W.; and Sumner Street, Southwark, S.E.	
Nov. 9	REES, JOHN CHARLES		
Feb. 8	REX, WILLIAM	311, Kentish Town Road, N.W.	
May 8	RICH, ROBERT	{ Sarsden Estate Office, near Chipping Norton, Oxfordshire.	
Jan. 24	ROBERTS, CHARLES		
Feb. 2	ROBERTS, CHARLES GAY	Haslemere, Surrey.	
Dec. 18	RYDE, ARTHUR LYON	29, Great George Street, Westminster, S.W.	
Nov. 8	RYDE, EDWARD HARROW	Woking, Surrey.	
Feb. 13	SHIELD, HUGH	3, King's Bench Walk, Temple.	
Jan. 29	SHOPPEE, CHARLES HERBERT	61, Doughty Street, W.C.	
Feb. 11	SHOPPEE, CONRAD JOSEPH	61, Doughty Street, W.C.	
Apr. 28	SLADEN, ST. BARBE	1, Delahay Street, Westminster, S.W.	
Mar. 17	SMITH, GEORGE CECIL	16, Whitehall Place, S.W.	
May 8	SMITH, HENRY	8, John Street, Adelphi, W.C.	
Apr. 26	SMITH, HENRY HERBERT	6, Whitehall, S.W.	
Jul. 27	SMITH, HERBERT EDMUND	Darlington, Durham.	
Apr. 8	SMITH, JOHN SMALMAN	3, Hare Court, Temple.	
Apr. 28	SMITH, LUMLEY	10, King's Bench Walk, Temple.	
Jan. 11	SMITH, WILLIAM BINNS	50, Pall Mall, S.W.	
Nov. 9	SMYTH, EDWARD	{ 9, Whitehall Place; and 100, Stockwell Park Road, S.W.	
Mar. 25	SQUAREY, TUCKER FULTON		
Jan. 6	STEPHENSON, CHARLES WILLIAM	1, Prince's Street, Westminster, S.W.	
Mar. 20	ST. QUINTIN, RICHARD SAMUEL	37, Threadneedle Street, E.C.	

Date of Election.

ASSOCIATES.

1875, Dec. 18	STRUTT, EDWARD GERALD, THE HON.	} Terling Place, Witham, Essex.
1875, Jan. 4	STRUTT, FREDERICK, THE HON.	88, Eaton Square; and Milford House, Derby.
1877, Dec. 10	SUTTON, HENRY	Farrar's Building, Temple.
1869, Jul. 26	TAYLOR, GEORGE.	{ Tithe and Inclosure Commission Office, James's Square, S.W.
1876, May 8	THESIGER, THE RIGHT HON. LORD JUSTICE	} 30, Stanhope Gardens, S.W.
1870, Feb. 21	THOMPSON, CHARLES WILLIAM .	Vacant Lands' Office, Guildhall, E.C.
1868, Jul. 20	TROLLOPE, GEORGE FRANCIS .	15, Parliament Street, Westminster, S.W.
1874, Jan. 19	USILL, GEORGE WILLIAM . . .	6, Great Queen Street, Westminster, S.W.
1878, Jan. 28	VIGERS, LESLIE ROBERT . . .	4, Frederick's Place, Old Jewry, E.C.
1879, Mar. 8	WAKEFIELD, GODFREY	5, Chancery Lane, W.C.
1876, Dec. 18	WATTS, CHARLES	37, Great George Street, Westminster, S.W.
1876, Nov. 27	*WEBSTER, RICHARD EVERARD, Q.C.,	2, Pump Court, Temple.
1871, Feb. 13	WHITE, FREDERICK MEADOWS, Q.C.,	4, Paper Buildings, Temple.
(Associate of Council)		
1873, Jan. 27	WHITE, THOMAS JENNINGS . . .	8, Whitehall Place, S.W.
1876, Dec. 18	WILL, JOHN SHIRESS	3, Pump Court, Temple.
1875, Jan. 18	WILLIAMS, LEONARD JAMES . .	6, Furnival's Inn, E.C.
1869, Apr. 5	WILLIAMS, RICHARD PRICE . . .	38, Parliament Street, S.W.
1876, Apr. 8	WILLIAMS, WILLIAM WELSEY . .	4, Newbold Street, Leamington.
1877, Jan. 29	*WILSON, RODERIC JOHN . . .	24, Old Square, Lincoln's Inn, W.C.
1869, Dec. 6	WILSON, WILLIAM	13, Dean's Yard, S.W.
1870, Jan. 10	WING, THOMAS TWINING	17, Woburn Square, W.C.
1875, May 15	WINCKWORTH, LEWIS	31, Abingdon Street, Westminster, S.W.
1879, Mar. 17	WOOD, HENRY	97, Gresham Street, E.C.
1876, Feb. 7	WOOLLEY, THOMAS CECIL SMITH	South Collingham, Newark, Notts.
1876, Apr. 24	WYATT, ROBERT	Acton Hill, Stafford.
1878, Dec. 9	YOUNG, MORGAN HENRY . . .	11, Red Lion Square, W.C.

*Date of
Admission.*

Students.

1876, Jul. 18	BURMESTER, JOHN WILLIAM } STANLEY	4, Spencer Villas, Southfields, Wandsworth.
1877, May 14	COSENS, ALAN	10, Palace Road, Upper Norwood, S.E.

ate of
mission.

STUDENTS.

8, May 13	CLARK, HARDING THOMAS . . .	67, Fellows Road, Hampstead.
8, Dec. 20	DAVIS, CHARLES JAMES . . .	2, The Terrace, Kennington Park, S.E.
9, Mar. 31	GURNEY, HAROLD . . .	8, Upper Hamilton Terrace, St. John's Wood, N.W.
9, Jan. 20	NOTTAGE, WILLIAM GRIGGS. . .	Mawbyns, Breakspear's Road, New Cross, S.E.
9, May 12	O'MEARA, ALFRED . . .	19, Conduit Street, Regent Street, W.
6, Nov. 27	PAULL, HENRY BAYNHAM . . .	6, Wellington Square, King's Road, Chelsea.

Members and Associates are particularly requested to communicate any changes of address to the Secretary, in order to obviate delay in the transmission of the Papers, &c., to which they are entitled.



